

1. Накев, Ж., С. Сланев, А. Стойков, **Й. Марчев**, 2005. Сравнително проучване върху кланичните качества и качеството на месото при двупородни хибридни свине с участието на Дунавска бяла порода. **Животновъдни науки**, 4, 13 – 19  
J.Nakev, S. Slanev, **Y.Marchev**, 2005, Comparative study on the slaughter characteristics and meat quality in two-breed hybrid pigs with participation of the Danube White Breed, *Journal of Animal Science*, 4, 13-19.

The objective of the study was to investigate the slaughter qualities and meat quality in two-breed hybrid pigs with participation of the Danube white Breed as a mother and sire line. Slaughter analysis of 30 slaughter halves of two two-breed hybrid combinations was performed by the National method. The combinations – synthetic line Landrace x Danube White (L x DW) and Danube White x English Landrace (DW x EL) were fattened simultaneously up to 100 kg live weight. It was established that the pigs from the combination DW x EL accreted more lean meat in the carcass by 3.51% compared to the combination in which Danube White breed was a sire line ( $P < 0.01$ ). The animals DW x EL had longer carcass by 3,42 cm ( $P < 0.01$ ) and thinner backfat by 10,02 mm YCKL, ( $P < 0.01$ ) and 5,49 mm average from 5 measurements ( $P < 0.001$ ) compared to L x DW. The meat of the pigs from the combination DW x EL had 0,88% lower water content ( $P < 0.05$ ), 0,90% higher protein content ( $P < 0.05$ ), higher values of pH<sub>1</sub> and pH<sub>2</sub> and more intensive colorization ( $P < 0.01$ ). It had better water holding capacity (1,29%) thinner muscle fibers and less thermal losses, but the differences are not significant.

2. Сланев, Ст. **Й. Марчев**, А. Апостолов, 2006. Сравнителна оценка на семенна течност при нерези от породите Дунавска бяла и Ландрас и техните реципрочни кръстоски, *Генетика и селекция*, 35,3-4, 39-44  
S. Slanev, **Y.Marchev**, A. Apostolov, 2005, Comparative estimation of boar sperm from the breeds Danube white, Landrace and their reciprocal crosses, *Genetics and breeding*, 35, 3-4, 39-44.

The study was carried out at the Experimental base of the Agricultural institute, Shumen, in 2004. The data of the reproductive qualities of purebred boars and their reciprocal crosses were analyzed. 90 ejaculates obtained from 18 boars of equal age (210-212 days) divided into four groups - four boars from the Danube white and Landrace as well as five crossed boars (♀ Danube white x ♂ Landrace) and (♀ Landrace x ♂ Danube white) from each genotype were subject of macroscopic and microscopic analysis. The Danube white x Landrace boars surpass the purebred boars and the crosses Landrace x Danube white as well. Positive and comparatively high crossing effect was established by the macroscopic and microscopic analysis of the semen in the crossed boars. By all studied traits the crosses (♀ Danube white x ♂ Landrace) had priority over the average results of the semen from the purebred boars (vol. 59,15ml, concentration 56,75mln/ml, dose number 4,98 and survival rate from 24h to 48 h, respectively 4,9-11,8%).

3. Вайсберг, Ч., Л. Железарски, С. Йовчев, А. Данев, **Й. Марчев**, 2006. Подобряване качеството на сперма от нерез след добавяне на селен към хранителната дажба, *Животновъдни науки*, 4,42-44.  
Ch. Vaisberg, L.Jelezarsky, S. Jovchev, A.Danev, **J.Marchev**, 2006, Improving boar semen by dietary selenium supplementation, *Journal of Animal Science*, 4, 42-44.

The supplementation, of 0.05 mg Se to the daily ration of boars significantly improved quality of semen with regard of sperm motility and integrity, as well as GPx activity and did

not cause an increase in the concentration of by-products of lipid peroxidation (MDA) in spite of the increase of gamete metabolic rates.

**4. Иванова-Пенева, Й. Марчев, 2006, Влияние на различни системи на поене върху поведението и продуктивността на подрастващи прасета, Животновъдни науки, 43, 4, 7-11.**

S. Ivanova-Peneva, **J. Marchev, 2006, Effect of different drinking systems on behavior and productivity of growing pigs, Journal of Animal Science, 4, 7-11**

Two subsequent trials with 54 growing pigs, divided in three groups were carried out. First group (control) received water from nipple drinker above the grid, second group - from nipple drinkers above the holes of the feeder and third – from sprinkling drinkers inside the feeder. It was concluded that after establishing social hierarchy the behavioural activity of pigs has been determined by the system of feeding and drinking. It was concluded the better system for the welfare of pigs was sprinkling drinkers inside the feeder in comparison to conventional one. The trend for better growth rate when drinkers were positioned above the feeder (higher ADG by 11%) or inside the feeder (higher ADG by 17%) and lower FCR of growing pigs in comparison to conventional drinker above the grid has been established.

**5. Й. Марчев, С. Иванова-Пенева, 2007, Ефект от добавката на ODOR LES-AN и ERGOZAN-DES върху показателите на микроклимата в сградата и продуктивността на свинете за угояване, Животновъдни науки, 44, 1, 34-37.**

**J. Marchev, S. Ivanova-Peneva, 2007, Effect of ODOR LES-AN and ERGOZAN-DES on the microclimate in the buildings and the productivity of fattening pigs, Journal of Animal Science, 44, 1, 34-37.**

An experiment was carried out with 136 fattening pigs of the Danube White breed (62 in the control group and 74 in the experimental group) raised in two different rooms in two periods during the autumn and winter. ODOR-LES (220g/t) was given as a supplement to the feed and ERGOZAN-DES was sprayed twice a day in the experimental room. Their effect on the concentration of ammonia and hydrogen sulphide and on the productivity of pigs was studied. The use of ODOR LES-AN and ERGOZAN-DES decreased ammonia concentration 1.93 times ( $P < 0.001$ ). The supplementation of the studied products did not influence the hydrogen sulphide concentration in the building. The application of ODOR LES-AN and ERGOZAN-DES decreased the frequency of ventilation and increased the temperature of the experimental room by 6-8°C. The average daily gain of fatteners in the experimental group increased by 85g ( $P < 0.05$ ) and the feed conversion ratio decreased by 339g.

**6. Стойков, А., С. Иванова-Пенева, Й. Марчев, П. Драгоев, Е. Гинева, К. Кулев, 2007, Съхранение, устойчиво развитие и ефективно използване на Източнобалканска свиня, Животновъдни науки, 5, 73-77.**

A. Stoykov, S. Ivanova-Peneva, **J. Marchev, P. Dragoev, E. Gineva, K. Kulev, 2007, Preservation, sustainable development and effective use of East Balkan swine, Journal of Animal Science, 5, 73-77.**

This paper deals with the origin and the population area of the East Balkan swine as well as its recent condition, characteristics and valuable economic qualities. The need for preservation, sustainable development and effective use of East Balkan swine is discussed. The measures of the execution of all these subjects included in the priorities of three main bodies: 1. The Association of breeding and preservation of East Balkan swine. 2. The research and education institutions in the country. 3. The Ministry of Agriculture and foodstuffs.

**7. С. Иванова-Пенева, Й. Марчев, А. Стойков, 2007, Отглеждане на Източнобалканска свиня според изискванията на ЕС, Академично издание на Аграрен факултет, Пловдив, т. LIII, 289-294.**

Sonya Ivanova-Peneva, **Yordan Marchev**, Alexi Stoykov, 2007, **Breeding of East Balkan swine according to the european union's requirements**, Академично издание на Аграрен факултет, Пловдив, т. LIII, 289-294.

Problems about management of East Balkan Swine, the only one preserved domestic pig breed in Bulgaria, are subject of this article. Preservation of the breed as an important genetic resource, as well as suitable measures in this direction are discussed. Good conditions and possibilities of organic farming of this breed exist. The perfect quality of meat and products of East Balkan Swine with high dietetic value could make it suitable to both local and European market and consumers.

**8. Марчев, Й. А.Апостолов, Р. Недева, 2007. Влияние на добавката на неорганичен селен в смеските за ремонтни женски прасета върху репродуктивната система, Животновъдни науки, 5, 14-17**

**Y.Marchev, A.Apostolov, R.Nedeva, 2007. Influence of inorganic selenium as a supplement in the compound feed on the reproductive system of gilts, Journal of animal science, 5, 14-17**

The experiment was carried out at the Agricultural Institute – Shoumen with 30 gilts from the Danube White breed divided into 2 groups. The gilts from the first group received 0.6 mg inorganic selenium as a Na selenium every day individually with the compound feeds. The gilts' weight, age at first and second estrus, and linear and weight development of the reproductive system were measured. It was obtained that inorganic selenium as a supplement in the compound feeds decreased with 9.7 days the age at which the gilts reached the first estrus ( $P<0.001$ ) The selenium supplementation influenced in a positive manner the weight and linear development of the gilts' reproductive system. A trend for a positive effect selenium supplementation on the weight and linear development of the gilts' reproductive system was expressed.

**9. Marchev, Y., R. Nedeva, A. Apostolov, E.Kistanova, D. Kacheva, D. Adzhieva, J. Koleva, K. Shumkov, G. Baryalv, M. Neviton, 2008. Effect of selenopyran treatment on the blood parameters and reproductive system of gilts. Proceeding of international scientific conference, Kaunas, 41-44**

The experiment was conducted in the experimental base of Agricultural Institute – Shoumen, Bulgaria with 18 gilts of Danube white breed randomly divided into two groups. It was started since 120 days age and live weight 30.5 kg and ended after achievement of live weight of 100 kg. The experimental gilts were injected intramuscularly with oil solution of preparation content 0.1  $\mu\text{g}/\text{kg}$  live weight selenopyran once per month. The effect of selenopyran on the morphological and biochemical blood parameters and on the morphological and physiological properties of the reproductive system of gilts was studied. The results show that animals treated with selenopyran increase the selenium level in blood ( $P<0.05$ ), the glucose content ( $P<0.01$ ) and activity of GOT ( $P<0.01$ ) and GPT ( $P<0.01$ ). Positive effect of selenopyran on the reproductive system of gilts was manifested in higher value of its all parameters observed in experimental group. The high positive correlations

between the selenium content in ovary, ovary weight and  $17\beta$ -estradiol level ( $P < 0.05$ ) was established.

**10.** Е.Кистанова, Д.Качева, Ж. Колева, К.Шумков Р.Недева, А.Апостолов, **Й.Марчев**, Д.Аджиева, Г. Боряев, М.Невитов, 2008. Развитие репродуктивной системы и интенсивность роста у ремонтных свиней, получивших селенопиран при вращивании от 30 до 100 kg живого веса. Сборник материалов о.Международной научно-практической конференции, 30-31 октября Пенза.

Исследование биохимии крови показало достоверное увеличение содержания селена в крови опитных животных. Установлена статистически достоверная положительная корреляция между содержанием селена в яйчниках и их весом ( $r = 0.76$ ;  $P < 0.05$ ) и уровнем эстрадиола в крови ( $r = 0.57$ ;  $P < 0.05$ ). Полученные результаты показали положительный эффект селенопирана на становление репродуктивной системы ремонтных свинок но биохимические механизмы этого влияния нуждаются дальнейшем исследовании.

**11.** Nedeva, R., A.Apostolov, **Y.Marchev**, E.Kistanova, D.Kacheva, E. Shumkov, G. Borjaev, 2009. Effect of the Injective Application of Selenopyran on the Productivity in Growing Gilts. Bulg. Journal of Agric. Sci., 15, № 6, 604-609.

The trace element selenium plays an important role in the biochemical processes of the living organisms. The wide application of the selenium-contented food additives is based on its antioxidative, cancer prevention and anti-inflammatory effects. A scientific and economic trial, comprising two groups of gilts from the Danube White, was carried out at the Agricultural Institute, Shumen. The aim of the present work was the study of the selenopyran effect on the growing intensity and meat quality in gilts. The trial started at 30.4-30.5 kg live weight and at 120 days of age, and finished at reaching 100 kg live weight. The groups were equalized by age, origin and live weight. The animals were raised and fed individually with equal rations. Percutaneous injection of selenopyran in the form of oil solution was given to the gilts from the experimental group, in dose of 0.1 mg/kg live weight, every 30 days. Slaughter analysis was performed after finishing the trial, and the meat quality was estimated by the control slaughtering method. A trend for higher daily gain by 8% in the gilts from the experimental group during the first sub-period (up to 60 kg) compared to the control group has been shown. The higher daily gain of 29 g (4.5%) in the animals treated with selenopyran was kept and the difference was significant by the whole experimental period. The gilts from the experimental group had significantly lower feed conversion ratio (by 278 g) and nutrients (by 9%,  $P < 0.05$ ) during the first sub-period (up to 60 kg live weight). The results about the slaughter traits show a trend for higher content of meat in the hind ham (by 69 g) and the weight of the right half (by 236 g) in the experimental group, whereas with respect to m.long.dorsi area (by 0.89cm<sup>2</sup>) and percentage of meat in the right half (by 1.18%) the differences are in favor of the control gilts. Fat thickness average from five measurements was not substantially influenced by the application of selenopyran. The gilts treated with selenopyran had meat with lower water holding capacity (WHC) (free water-31.87%) compared to the animals from the control group-30.54% (by 1.33%, ( $P < 0.05$ )). There are significant differences for the loss at roasting. Its value is lower by 3.2% ( $P < 0.05$ ) for the meat of the treated animals.

**12.** Kistanova, E., **Y. Marchev**, R.Nedeva, D.Kacheva, K.Shumkov, B.Georgiev, A.Shumkov, 2009. Effect of the Spirulina platensis included in the main diet on the boar sperm quality, *Biotechnology in Animal Husbandry*, 25, 5-6, p. 547-557.

Microalgae Spirulina platensis accumulates many chemical components which are suitable for all higher organisms as food and forage raw material. There are a lot of vitally important for the organisms minerals and macroelements such as iron, calcium, sodium, potassium, copper, magnesium, phosphorus, selenium, vitamins, carotin, nucleic acids, enzymes and other active substances. That should explain the value of Spirulina as a feed additive for the agricultural animals. In the present work the influence of the microalgae Spirulina platensis on the quantitative and qualitative characteristics of boars' sperm was studied. The experiment was carried out with 6 boars from Danube white breed in the experimental animal base of the Agricultural Institute - Shumen. The time of the experiment was divided in the control and experimental periods. During the control period the animals received the main diet in accordance with Bulgarian state standard BDS- 1642-96. In the experimental period to the main diet was added 7 ml/ per head the fresh biomass of microalgae preserved by melasa (final quantity - 1,4 mg Spirulina platensis). The obtained results shown that the addition of Spirulina improves the sperm parameters in boars: the volume of the ejaculates increased with 30 ml in experimental period (306 ml against 276 in control, ( $P < 0,05$ ) as well as the spermatozoa concentration enhanced with 27 mln/ml. The total dehydrogenases activities estimated by reaction with methylene blue as well as LDH activity were higher in the experimental period. Also the survivability of the spermatozoids at 24, 48 and 72 hour in the experimental period was more than in control.

**13.** Стайкова, Г., **Й. Марчев**, Н. Станчева. 2010. Ефект от използването на нехормонални методи за стимулиране и синхронизация на еструса при овце от Кавказката порода. *Животновъдни науки*, 6, 9 - 14.

G. Staykova, J. Marchev, N. Stancheva, 2010, Effect of Use of Non-Hormonal Methods for Stimulation and Estrus Synchronization in Sheep from the Caucasian Breed, *Journal of Animal Science*, 6, 9-14

An investigation was carried out for establishing the effect of use of non-hormonal methods for stimulation and estrus synchronization in 423 sheep from the Caucasian breed in different body condition. The influence of static, dynamic, and acute effect was studied by using various schemes of additional feeding and the ram stimulation effect. It was established that under optimal breeding condition (BCS = 3.47) the best results were obtained by using ram stimulation and applying acute additional feeding. Dynamic feeding for a period of 35 days is suitable for ewes having BCS – 3.20.

**14.** **Й. Марчев**, Г. Стайкова, Н. Станчева. 2011. Полова активност и зависимост между степента на нейната изява и качеството на спермата при кочове от Кавказка и Асканийска породи. *Животновъдни науки* 5, 53-58.

**J. Marchev**, G.Staykova, N.Stancheva, 2011, Sexual activity and dependence between the stage of its action and the quality of the rams' sperm from the Caucasian and Ascanian breeds, *Journal of Animal Science*, 5,53-58.

A scientific-practical experiment with 31 Caucasian and 10 Ascanian rams used as brood animals in “Kabiuk” was carried out. The sexual activity was controlled – the time (min) from the ram release in the mating pen to the covering the sheep, the time (sec) from the covering to the ejaculation and number of covers to performing of an effective ejaculation. An assessment of the sperm was done regarding the volume, density and motility of spermatozoa. The phenotypic correlations between the sexual behavior and the sperm quality were calculated. The technological time for an effective cover was defined on the base of he controlled traits and showed a tendency of higher libido in 31 Caucasian rams (5min 54 sec) in comparison with the Ascanian ones (7min 2sec). Low to average values of phenotypic correlations between the stage of sexual activity and density of sperm in rams from the two examined breeds were established ( $r_p = -0.357$  and  $r_p = -0.272$ ) for Ascanian and ( $r_p = -0.262$  and  $r_p = -0.219$ ) for Caucasian breed. Analogical tendency ( $r_p = -0.346$ ) for Ascanian and  $r_p = -0.282$  for Caucasian breed between the time to the first contact and motility of spermatozoa is observed.

**15.** Г.Стайкова, **Й. Марчев**, Н. Станчева. 2011. Ефект от използването на нехормонални методи за повишаване на плодовитостта при овце от Кавказката порода. Животновъдни науки , 6, 3-9.

G.Staykova, **J.Marchev**, N.Stancheva, 2011, Effect of Use of Non-Hormonal Methods for increasing the fertility in Sheep from the Caucasian Breed, Journal of Animal science, 6, 3-9.

An investigation with 423 sheep from the Caucasian breed from Kabiuk was carried out. An evaluation of influence of Nonhormonal different methods like additional feeding according to the results on the body condition assessment on the fertility results was made. An statistical effect from optimal body condition without additional feeding, dynamical effect from the additional feeding 20 days before and 15 days after beginning of estrus, acute effect from the additional feeding from 11 till 15 day of estrus cycle (flushing) was tested. Synchronization of estrus was provoked by ram - stimulator. It was established that using flushing the conception rate has gone up to 13.19% and the biological fertility - 23.09%. The dynamic feeding cause the weaker but positive effect on the conception rate (5.91%) and the fertility (10.70%). The static effect on the reproductive results was insignificant regardless of the level of stoutness.

**16.** Накев, Ж., **Й.Марчев**, Р.Недева, С.Иванона-Пенева, Н.Палова, Е.Гинева, К.Кулев, 2011, Източнобалканската свиня – състояние и перспективи, Аграрни науки, Пловдив, 6, 89- 92

Jivko Nakev, **Jordan Marchev**, Radka Nedeva, Sonya Ivanova – Peneva, Nadejda Palova, Elena Gineva, Kulyo Kulev, 2011. East Balkan swine breed- current state and perspectives. Agricultural sciences, Plovdiv, 6, 89-92

The current state and perspectives for the development of the East Balkan pigs in Bulgaria are presented in the article. The total number of selection controlled pigs in 2009 was established to be 1.858, the population decrease as compared to 2006 was by 41.9% and in 2010 – by 62% in comparison to 2006. The reasons for this decrease are pointed out and the results of the studies undertaken until the present moment are presented. A SWOT analysis necessary for the development strategy of the breed was made. The results showed

that the prerequisites for an increase of the pig population existed. It is necessary to set up the production of boutique meat products and promote them intensively. A change of governmental subsidizing practices and better use for the opportunities of the Programme for Rural Development for the production of ecological meat products are considered indispensable.

**17. Палова, Н., Р.Недева, К.Стоева, Й.Марчев, 2011, Влияние на различни видове фуражи върху продуктивността на подрастващи прасета от Източнобалканската порода, Аграрни науки, Пловдив, 6, 95- 98.**

Nadezhda Palova, Radka Nedeva, Kera Stoeva, **Yordan Marchev**, 2011. Influence of two different fodders on the productivity of growing – finishing pigs from the Eastern Balkan swine breed, Agricultural sciences, Plovdiv, 6, 95-98

The experiment was performed at the Regional Centre for Scientific and Applied Services in Sredetz in the Region of the Strandzha Mountain, with 18 growing-finishing pigs divided into two groups, each including 9 animals (5 male and 4 female). The pigs from the first group were fed with a compounded fodder, consisting of 15.5% crude protein and 0.73% lysine. The pigs from the second group received full – grain Triticale. The experiment started when the pigs were weaned, at 60 days of age (9.1 kg b.w.) and continued up to day 152 after birth (21.6-22.8 b.w.). The obtained results showed that the pigs from the first group had higher body gain (149 g) compared to the pigs in the second group (135 g). The used pasture in the above mentioned region (from 550 kg/da to 840 kg/da verdant grass) was not appropriate for independent feeding of the Eastern Balkan swine breed pigs.

**18. Йордан Марчев, Марияна Петрова, 2012, Възраст за настъпване на полова зрелост и развитие на половата система при женски ремонтни прасета от стадото на “Екопиг”- 2006” ЕООД, Селскостопанска наука, 45, (5-6), 8-12**

**Marchev, Yordan** , Mariana Petrova, 2012. Age of sexual maturity and development of reproductive system in gilts from “Ecopig” -2006 LTD. *Agricultural Science*, 45 (No 5-6):8-12

Study with 40 gilts from two different origins (LW x L) and (LWxL)xD was carried out. The age of I, II and III estrus and interval between I: II and II: III estrus was following out. The weight and linear development of reproductive system after III estrus was estimated. The results show average age for maturity 178.6 days in LW x L and 182.5 days in (LWxL)xD. The 3.9 days difference between two origins is not significant, which means that in this farm the gilt’s origin is not determinative factor for functional development of reproductive system. Period between I:II and II: III estrus (20.8 - 21.2 days) is practically equal in two studied origins. The same tendency is establish about the weight and linear development of reproductive system. Differences between total weight (520 g v.s. 507 g) and uterus horns are due to individual peculiarity of animals and the breeding and feeding conditions in the farm.

**19. Йордан Марчев, Татяна Иванова, Красимир Колев, 2012, Ефект от прилагане на prid метода в схеми за хормонално третиране върху репродуктивния отговор при крави и юници от холщайн-фризийска порода ,Селскостопанска наука, 45 (No 5-6) 13-19**

**M. Yordan**, Tatiana IVANOVA , Krasimir KOLEV, 2012. Effect of using prid method in different schemes for hormonal treatments on the reproductive response in cows and heifers from the Holstein Friesian breed. *Agricultural Science* 45 (No 5-6): 13-19

Effect of two different schemes for hormonal treatments to cows with reproductive disorders and heifers to estrus synchronization based on the PRID method was established. All treated animals were inseminated to 48th and to 72nd hour after removal of the device independently of estrus manifestation. On the 50th day after insemination, the animals were checked for early pregnancy by ultrasonic device. The results show that the PRID method is universal for cows and heifers as well as anoestrus and cyclic animals. Tested schemes for estrus synchronization based on the PRID method allow useful application of time oriented insemination. In another hand, the PRID method increases the fertility (in our study up to 80 %) and decrease percentage of wasted animals because of reproductive disorders.

**20.** Богдан Шостак, Апостол Апостолов, **Йордан Марчев**, 2012, Анализ на интензитета на използване на свинете майки, отглеждани в региона на Люблин, Полша, *Селскостопанска наука*, 45 (No 5-6) 2012, 3-7

Szostak, Bogdan, Apostol Apostolov and **Yordan Marchev**, 2012. Analysis of the intensity of use of breeding sows reared in Lublin region, Poland. *Agricultural Science*, 45 ( 5-6): 3-7

Study for intensity of the use of breeding sows from Polish Large White, Polish Landrace, Pulawska reared in the region of Lublin, Poland, was carried out. Age of first furrowing, period between furrowing and number of furrowing per sow per year were analyzed. It is established the controlled maternal breeds' sows from Lublin region breeding farms are characterized with intensive reproductive use. Age for first furrowing is from 324 to 343 days. The comparatively short period between furrowing allows receiving of more than two litters per year. Average values of investigative indexes in analyzed farms are different for each of controlled breed. That is a result from different decisions by the farmers about intensity of reproductive use of sows. This is a correct approach because sows reproductive use depends in great extent from the environment conditions in the separated farms.

**21.** М.Бойчев, **Йордан Марчев**, 2012, Влияние на различни равнища на протеин и енергия в дажбите на нерези разплодници върху половото поведение и качеството на спермата, *Животновъдни науки*, 3, 17-23.

M.Boychev, **Y.Marchev**, 2012, The interrelation between varying levels of protein and energy in the food ration for boars kept for breeding purposes, their sexual behaviour and the quality of their sperm, *Journal of Animal science*, 3, 17-23.

The experiment was carried out in the Agricultural institute – Shumen and involved 20 boars of the Danube white breed, each fed on daily rations of 2.3kg combined forage containing varying amounts of crude protein and metabolizable energy. The time was measured between entering the boar into the mating box, its mating with dummy and duration of ejaculation. The ejaculates were then measured in terms of amount (cm<sup>3</sup>) density (mln/cm<sup>3</sup>), pH, number of doses for insemination from one ejaculate, survival of spermatozoa after 24, 48 and 72 hours and their dehydrogenase activity. The conclusion is that increasing the level of metabolizable energy from 11.50 MJ/kg to 13.60MJ/kg notably affects the time for ejaculation (P≤0.05). The time for ejaculation (P≤0.05) is in medium positive correlation

with of the amount of ejaculates ( $r_p=0.248^*$  and  $r_p=0.139$ ). A negative interrelation is established between the time for ejaculation and the density of sperm ( $r_p= - 0.129$  for group I and  $r_p= - 0.132$  for group II).

**22.** Данаил Кънев, Надежда Палова, **Йордан Марчев**, Соня Иванова-Пенева, 2013. Влияние на отпадъчни продукти от спиртоварната промишленост при хранене на бозаещи прасета от Източнобалканска порода. Животновъдни науки, 6, 16-20  
D.Kanev, N.Palova, **Y. Marchev**, S. Ivanova-Peneva, 2013, Influence of wheat dried distillers grains with solubles in feeding the suckling piglets the East Balkan breed, Journal of Animal Science, 6, 16-20.

A scientific and economic experiment with 45 suckling piglets divided into two groups of 4 litters each (23 and 22 heads in a group) was carried out in Experimental station on agriculture-Sredetz. The pigs from the first group received compound feed while those of the second -70% of this feed and 30% of wheat dried distillers grains with solubles (wDDGS). The average daily gain was non-significantly lower by 21,16. The replacement of 30% of the traditional feed with wDDGS had negative effect on the average daily gain and feed conversion ration. Stronger influence on the intensity of growth had initial live weight of suckling piglets ( $P \leq 0.001$ ).

**23.** М. Петрова, **Й. Марчев**, 2013, Влияние на продължителността на бозайния период и сезона върху продължителността на интервала отбиване-разгонване при свинете майки, Животновъдни науки, 6, 21-24.  
Mariyana Petrova, **Yordan Marchev**, Influence of suckling period and season on weaning - to- conception interval in sows, Journal of animal science, 6, 21-24.

Evaluation of the influence of the suckling period and season on weaning-to-conception interval on the basis of information from 690 sows (LWxL) was carried out. Data from two levels of suckling period – (4 and 5 weeks) and for 4 seasons were analyzed. An average duration of 7.61 days of the weaning-to-conception interval was established. Phenotypic variability in dependence on the studied factors was observed. For 4 week suckling period the weaning-to-conception interval was 7.1 days and for 5 week – 8.03 days. Season had significant ( $P < 0.05$ ) effect on this interval, lowest in autumn (6.87) days and highest in summer (8.12) days. In the other two seasons the duration of weaning-to-conception interval takes intermediate position – 7.82 days in the spring and 7.28 days in the winter.

**24.** Накев, Ж., Р.Недева, **Й.Марчев**, Е.Гинева, Н.Палова, 2013. Ефект от добавката на Вемозим в смеските с повишено съдържание на влакнини върху кланичните показатели на угодвани прасета, Животновъдни науки, 6, 6-9.  
Z.Nakev, R.Nedeva, **Y.Marchev**, E.Gineva, N.Palova, 2013. Effect of Vemozyme supplementation in compound feeds with high fiber content on carcass characteristics on fattening pigs, Journal of animal science, 6, 6-9

In the Agricultural Institute, Shumen was carried out a scientific and economic experiment total with 20 fattening pigs from Danube White breed, divided into 2 groups, in 10 pigs in group. The experiment started at 34.0-35.0 kg live weight and finished at 107.7-108.6 kg live weight. The experiment was carried out in two periods-the first from 34.0-35.0 kg live

weight to 57.5-58.9 live weight and the second – from 57.5-58.9 kg till 107.7-108.6 kg live weight. The aim of the study was to determine the influence of Vemozyme in compound feeds (with 6.1%-6.6% crude fiber, respectively in first and second period) for fattening pigs from Danube White breed in 0.1% and 0.05% did not influence on slaughter indexes of carcass and chemical composition and quality of m. long.dorsi.

**25.** Накев, Ж., Г.Йорданова, Р.Недева, **Й.Марчев**, Е.Кистанова,, А.Шимкус, А.Шимкене, Г.Петров, 2013. Влияние на добавката от микроалги *Spirulina platensis* върху кланичните качества и физикохимичния състав на m. longissimus dorsi при угоявани прасета, Животновъдни науки, 6, 10-15.

J.Nakev, G.Yordanova, R.Nedeva, **J. Marchev**, E.Kistanova, A.Shimkus, A.Shimkiene, G.Petrov, 2013. Effect of the supplementation of microalgae *Spirulina platensis* on the carcass qualities and physicochemical structure of m.Longissimus dorsi on fattening pigs, Journal of animal science, 6, 10-15

A scientific-economic experiment with a total number of 21 Danube White fattening pigs, divided into 3 groups of 7 pigs each was carried out at the Agricultural Institute Shumen. The experiment was started at 34.714-34.857 kg live weight and finished at 110-113 kg. Animals from II and III (experimental) groups were fed with the compound feed of the I group to which was added *Spirulina platensis* (2 and 3 g/per capita daily). After reaching the pre-slaughter weight, animals were slaughtered. The carcass dissection was made by BDS 4349-78. The aim of the present study was to investigate the effect of the supplementation of microalgae *Spirulina platensis* on the carcass qualities, the quality and chemical structure of carcass on fattening pigs. It was established that the addition of *Spirulina platensis* in the compound feed of fattening pigs effects insignificantly on the traits which characterize the physicochemical structure and the carcass quality. The supplementation of 2 g/capita daily *Spirulina platensis* in the compound feed of fattening pigs from Danube White breed significantly increases the percentage of meat with bones in the carcass with 4.13% and reduces the fat quantity with 22.45% ( $P \leq 0.05$ ).

**26.** Недева, Р., Ж.Накев, Д.Кънев, **Й.Марчев**, А.Апостолов, 2014. Влияние на повишеното равнище на влакнини чрез включване на люцерново брашно върху продуктивността, кланичните качества и физикохимичния състав на m. Long. dorsi при угоявани прасета, Животновъдни науки, 6, 56-61.

R. Nedeva, J. Nakev, D. Kanev, **Y. Marchev**, A. Apostolov, 2014. Effect of high level of fibers by adding lucerne meal on the productivity, carcass traits and physico-chemical composition of m. Long. dorsi in fattening pigs, Journal of animal science, 6, 56-61

In Agricultural institute - Shumen was carried out a scientific-economic experiment with a total number of 20 pigs from Danube white breed, divided into two groups with 10 pigs in each. The experiment has started in 36.857-37.000 kg live weight and has ended in 103.710-106.286 kg live weight. The aim of the present study was to establish the effect of high level of fibers from the use of lucerne meal on the productivity, carcass traits and physico-chemical composition of m. long. dorsi in fattening pigs. It was established that by adding 2.5% lucerne meal in the compound feed for Danube white fattening pigs from 36 kg to 80 kg live weight the gain increased insignificantly with 10,06% and has improved the feed

conversion ratio with about 10,27% but didn't influence on the productivity during the finishing period (from 76 kg to 106 kg live weight). The use of 2.5% lucerne meal in the compound feed for fattening pigs didn't effect on the values of the separate carcass and quality traits of m. Long. Dorsi. There are higher values of traits like fat with 8,95% (insignificantly) and calcium contain with 30.91 % ( $P \leq 0.05$ ) in m. Long. Dorsi in pigs from the experimental group.

**27.** Desislava Vasileva Abadjieva, Elena K. Kistanova, **Yordan Marchev**, Radka Nedeva, Chaika Vaisberg, Rossen Georgiev Stefanov, Gennadiy Boryaev, Mihail Nevitov, 2014, Improvement of the antioxidative status of pig ovaries by selenopyran treatment, *Mac Vet Rev* 2014; 37 (2): 165-170

Selenium is an essential micro-element in animal diet due to its high antioxidative properties. As a part of selenocystein it is an important constituent of the glutathione peroxidase (GPx) enzyme, which has a big importance for cell protection from oxidative damage. The aim of the present work was the investigation of the selenopyran effect on the antioxidative state of the pig ovary. The experiment was conducted with 18 gilts of Danube white breed randomly divided into two groups between 120 - 228 days of age. The animals received equal basal diets without selenium additives. The experimental gilts were injected once per month intramuscularly with oil solution of preparation selenopyran (9-phenylsymmetrical octahydroselenoxanthene) ensured 0.1 mgSe/kg live weight. After slaughtering, the ovaries were used for histological analysis and estimation of the selenium content in ovarian tissue by the atomic absorption spectroscopy method. The GPx activity in ovary homogenates using the colorimetric assay kit (BioVision) was measured. The expression of  $\gamma$ -glutamyl transpeptidase (GGT) in ovaries by immunohistochemical method was estimated. The selenopyran treatment leads to significant ( $P < 0.05$ ) increase of the selenium level in blood and non-significant ( $P > 0.05$ ) in ovarian tissue. Enhancement of GPx activity in the ovaries of experimental group was observed ( $142.61 \pm 6.6$  versus  $122.28 \pm 3.4$  U/gP,  $P < 0.05$ ). The GGT expression in the ovarian cortex cells, follicular fluid and in the erythrocytes of ovarian blood vessels in treated gilts was an evidence of active transport of glutathione from blood to the ovary tissue. The selenopyran treatment promotes the increase of the GPx dependent antioxidative defense in ovary of growing gilts.

**28.** Марияна Петрова, **Йордан Марчев**, 2014, Проучване върху ефективността на използване на свинете майки, *Селскостопанска наука*, 47 (no 2-3) 2014, 71-75.

Mariyana Petrova, **Yordan Marchev**, 2014, Investigation on efficiency of using of sows, *Agricultural Science*, 47 (No 2-3):71-75.

An investigation with 189 sows Camborough 23 from the "Ecopig-2006" LTD was carried out. The purpose of investigation was to define efficiency of using of sows on the basis of PSY using the formula offered by Jensen (2004):

$$PSY = (((365 - E)/(L + W + K1)) \times N) \times ((100 - M)/100)$$

The data shows that the number of litters per sow per year was 2.15, number of empty days (E) – 41.64, piglets born alive per litter (N) -11.55, % pre-weaning mortality (M) - 7.93%, lactation length (L) - 28 days, the weaning to conception interval (W) - 7.64 days. The obtained result show that the average number of PSY of analyzed farm is 22,84, which is

lower by 12.5% in comparison with EU countries. Improvement in sow productivity will be achieved by a combination of measures, which include better management of the factors concerning sow's reproductive ability.

**29.** Кънев, Д., Н.Палова, **Й.Марчев**, С.Иванова, Р.Недева, 2014. Влияние на отпадъчни продукти от спиртоварната промишленост при хранене на кърмещи свине-майки от Източнобалканската порода, Животновъдни науки, 1-2, 59-65

D.Kanev, N. Palova, **Y.Marchev**, S.Ivanova-Peneva, R.Nedeva, 2014. Use of waste dried distillers grains with soluble in feeding the lactation sows from the East Balkan breed, Journal of animal science, 1-2, 59-65

A scientific experiment was carried out in Experimental station on agriculture-Sredetz with 8 lactating sows from East Balkan breed, to study the effect of adding wheat Distillered Dried grain with Solubles (wDDGS). Animals were distributed in 2 groups by 4. Sows of the control group received compound feed and those of the experimental -70% of this feed and 30% of wDDGS. Sows were fed with traditional natural diet – on pasture and feeding of compound feed 2 kg per animal per day. Replacement of 30% of the traditional feed with wDDGS had a strong positive effect on final live weight of lactating sows from East Balkan breed – at weaning of piglets. The decrease in weight of pigs of the experimental group was 0.174 kg/sow/day, statistically not significant, was more than half (51.72%) of those of the control group-0.337 kg/sow/day. Initial live weight of lactating sows has been had a weak, positive and statistically significant impact on their weight at weaning of piglets (P=0.023).

**30.** Т.Николова, М.Петрова, **Й.Марчев**, 2015, Влияние на начина на отглеждане по време на бременността върху някои хематологични показатели при свинете, Животновъдни науки, 5,58-61.

T.Nikolova, M.Petrova, **Y.Marchev**, 2015, Influence of the method of breeding on some haematological parameters in swines during pregnancy period, Journal of animal science, 5, 58-61.

A study was conducted with 24 pregnant sows from the hybrid Camborow with three different types of housing – individual pens (IP), group pens (GP), and groups with individual feeding stalls (GPIS). The aim was to study the influence of the type of housing during pregnancy on some haematological parameters of the sows. Hematocrit (Hct, %), leukocytes (WBC/ mm<sup>3</sup>), erythrocytes (RBC/ mm<sup>3</sup>), hemoglobin (Hb, g / l) and glucose (Glc, mmol / l) were controlled. Significant influence of housing system was established on haematological parameters. The total WBC count in the sows housed individually was by 5522 per mm<sup>3</sup> (P <0.001) higher than those in groups and by 5462 per mm<sup>3</sup> (P <0.001) than those in groups with individual feeding stalls. The RBC count was higher in the group-housed pigs with higher physical activity, leading to consumption of more nutrients and oxygen. The differences of 0, 241 RBC / mm<sup>3</sup> between GP and IP and 0,532 RBC / mm<sup>3</sup> between GP and GPIS are significant (P <0.01). The greatest amount of Hb was observed in the sows housed in group pens where the deviation from the overall LS-mean is +5.79%.

**31.** B. Szostak, A. Apostolov and **J. Marchev**, 2015, The influence of the libido of Polish Large White boars on their ejaculates, *Bulgarian Journal of Agricultural Science*, 21 (No 2) 2015, 394–398.

In the paper the influence of the sexual behaviour of Polish Large White boars on the features of their ejaculates was defined. The boars taking part in the study were divided into three groups: I – high-libido boars (mounting the dummy within 3 min), II – medium-libido boars (peaceful mounting within 5 min) and III – low-libido boars (mounting the dummy within 10 min). The study found that ejaculate parameters of boars expressing various sexual behaviors were significantly diversified. The boars expressing the highest level of sexual behavior (group I) were characterized by the greatest amount of ejaculate, the greatest number of spermatozoa with progressive motility and the biggest number of insemination doses from one ejaculate. The biggest total number of defective spermatozoa was produced by the gonads of boars expressing the lowest level of sexual behavior – 10.9%, making this group significantly different from groups I and II.

**32.** D. Hirata, V. D. Doichev, E. G. Raichev, N. A. Palova, J. L. Nakev, **Y. M. Yordanov**, Y. Kaneko and R. Masuda, 2015, Genetic variation of the East Balkan swine (*sus scrofa*) in Bulgaria, revealed by mitochondrial DNA and y chromosomal DNA, *Animal Genetics*, doi: 10.1111/age.12269.

East Balkan Swine (EBS) *Sus scrofa* is the only aboriginal domesticated pig breed in Bulgaria and is distributed on the western coast of the Black Sea in Bulgaria. To reveal the breed's genetic characteristics, we analysed mitochondrial DNA (mtDNA) and Y chromosomal DNA sequences of EBS in Bulgaria. Nucleotide diversity ( $p_n$ ) of the mtDNA control region, including two newly found haplotypes, in 54 EBS was higher ( $0.014 \pm 0.007$ ) compared with that of European ( $0.005 \pm 0.003$ ) and Asian ( $0.006 \pm 0.003$ ) domestic pigs and wild boar. The median-joining network based on the mtDNA control region showed that the EBS and wild boar in Bulgaria comprised mainly two major mtDNA clades, European clade E1 (61.3%) and Asian clade A (38.7%). The coexistence of two mtDNA clades in EBS in Bulgaria may be the relict of historical pig translocation. Among the Bulgarian EBS colonies, the geographical differences in distribution of two mtDNA clades (E1 and A) could be attributed to the source pig populations and/or historical crossbreeding with imported pigs. In addition, analysis of the Y chromosomal DNA sequences for the EBS revealed that all of the EBS had haplotype HY1, which is dominant in European domestic pigs.

**33.** Yordanova, G., T. Popova, J. Nakev, R. Nedeva, **Y. Marchev**, E. Kistanova, A. Shimkus, 2015. Lipid profile of *m. Longissimus dorsi* in response to dietary *spirulina platensis* supplementation in pigs, *Bulgarian Journal of Agricultural Science*, 21 (no 5) 2015, 1054-1059.

The changes of the lipid profile and the fatty acid composition in the triacylglycerols and phospholipids in *m. Longissimus dorsi* (*m. LD*) of Danube White pigs in response to dietary *Spirulina* supplementation were studied. The experiment was divided in two sub periods, starting at 34 kg and ending at 102.5-106.3 kg live weight. The pigs in the trial were divided in three groups – control and two experimental. The pigs from the experimental groups were fed the same diet as the control group. The first experimental group (SP1) received additionally 2 g *Spirulina platensis* per capita daily only during the second sub

period, while the pigs from the second experimental group (SP2) received the same amount (2 g) of Spirulina during the whole trial period. Dietary Spirulina supplementation did not influence the content of total lipids in m. LD although in the experimental groups they tended to increase. Significant decrease in the content of C14:0 in the triacylglycerols was observed in response to Spirulina supplement ( $P < 0.05$ ) while in the phospholipid fraction the amount of C18:3n-6, C20:4 and C20:5 showed significant increase ( $P < 0.05$ ). The content of C18:3n-3 and C22:5 tended to increase in m. LD of the pigs from the experimental groups.

**34.** Apostolov A., R.Nedeva, M.Bojkova, **Y.Marchev**, P.Penchev, T.Nikolova, 2015. Influence of higher energy level in the compound feed on sow body weight development and milk yield, Journal of animal science, 5, 27-30.

The objective of the study was to test the influence of higher energy level in the compound feed on sow body development and milk yield (detected through piglets' growth rate). During lactation period, two scientific experiments were carried out at Agricultural institute – Shumen. The First Experiment comprised 8 primiparous sows allotted into two groups of 4 animals. The Second Experiment comprised 10 primiparous sows also allotted into two groups. The sows from the two experiments were allotted by the analog method – observing number, live weight, and lineage. Each of the two experiments was under the following scheme: group I, control– fed standard feed; and group II, experimental – standard feed supplemented with 8% Nutracore. Nutracore is protected fat, forage raw material and quality source of energy. It is a calcium salt of long-chained fatty acids. It contains palm oil fatty acids, calcium, and water. In conclusion administration of higher energy level in the compound feeds (from 12.01-12.27 to 13.77-13.88 MJ) for lactating Danube White sows improves their milk yield, expressed by the live weight of their piglets at the 21-st day.

**35.** Desislava Abadjieva, Radka Nedeva, **Yordan Marchev**, Gergana Jordanova, Michail Chervenkov, Julieta Dineva, Almantas Shimkus, Aldona Shimkiene Katja Teerds, Elena Kistanova, 2016, Spirulina platensis supplementation affects folliculogenesis, progesterone and ghrelin levels in fattening pre-pubertal gilt, J Appl Phycol., doi 10.1007/s10811-017-1263-7.

The aim of the present investigation was to study the effect of *Arthrospira* (*Spirulina*) *platensis* supplemented diet on follicular development and related endocrine parameters, such as estradiol and progesterone levels as well as ghrelin levels in pre-pubertal gilts. Twenty-one 60-day-old Danube White gilts, randomly divided in three groups—control and two experimental—were involved in the experiment. The diet of experimental animals was supplemented with 2 and 3 g of dry biomass/capita daily of the micro alga *A. platensis* (SP), respectively, during 120 days. Pigs weighing between 109.3 and 114.7 kg were slaughtered at the age of 180 days. The visual macroscopic and histological analysis of removed ovaries was done. Progesterone and estradiol levels by radioimmunoassay (RIA) and ghrelin by ELISE methods were measured. The presence of corpora lutea in the ovaries of animals from all three groups as well as the progesterone and estradiol levels indicated that the animals were cycling and puberty had started at the time of slaughtering. In the SP 3-g group, the number of large follicles and corpora lutea was significantly higher compared to the control group and the corpora albicans were found. A positive correlation was observed between ghrelin and progesterone among all groups as well as between estradiol and ghrelin in the experimental groups independent on dosages of SP. *Arthrospira platensis*-supplemented diet provoked a

successful follicular development and an earlier ovulation during sexual maturation of pigs between 60 and 180 days.

**36.** Apostolov, A., R.Nedeva, M.Bojkova, **Y.Marchev**, P.Penchev, 2016. Evaluation on sow body development throughout the reproduction cycle and its influence on reproductive performance in the Danube white breed, Bulgarian Journal of agricultural science, 1, 22, 144-150.

The dynamics of body development have been estimated in 757 Danube White sows in four periods of their reproduction cycle: at 90 kg of live weight; at mating; at 30-day gestation; and at 110-day gestation. Subject of control were the sow productivity traits: live weight; backfat thickness at points X1 and X2; depth of m. longissimus dorsi; and lean meat percentage. Subject of analysis were the reproductive ability of sows from first to seventh and more litters. The controlled sow's reproduction traits were litter size at birth and at 21-st day, as well litter weight at birth and at 21-st day. The results representing reproduction capacity in relation to body development during gestation indicated that the sows with thicker backfat have litters with larger size ( $P \leq 0.001$ ) and weight ( $P \leq 0.01$ ) at farrowing. Maintaining backfat of appropriate and constant thickness (18-20 mm) throughout the reproduction cycle of the Danube White sows is more essential for their reproductive efficiency and welfare than controlling it by standard testing or at the time of mating.

**37.** Yordanova, G., J.Nakev, R.Nedeva, **Y.Marchev**, T.Popova, E.Kistanova, 2016. Effect of the addition of spirulina platensis on the carcass traits, chemical composition and physical characteristics of m. Longissimus dorsi in fattening pigs. Bulgarian Journal of Agricultural Science, 5, 815-820, b

In Agricultural institute – Shumen a scientific-economic experiment with 33 fattening pigs from Danube white breed divided into three groups was carried out. The experiment was divided into two sub periods, has started in 34 kg live weight to 60 kg (I sub period) and has ended in 102.5–106.3 kg live weight. I group was control; the pigs from II group was supplemented with Sperulina plantensis during second sub period of fattening, and III group – during whole fattening period. A slaughter analysis was made of all the animals after 24 hours of cooling the carcass as the dimensions were established by Bulgarian State standard (BDS) 4349-78 (1978). The aim was to establish the effect of the addition of Spirulina platensis on the carcass traits, chemical composition and the physical characteristics of M. long. dorsi in fattening pigs. It was established that by adding of Spirulina platensis (2 g/pig/d) the percent of the meat with bones in the separate parts of the carcass increases and the values of the total fat quantity in the carcass are considerably lowered – with 20.31% in pigs from the II group and with 17.85% in those from the III group. The fat percent in animals' meat is insignificantly lower from the experimental group as a result of the lower lipogenesis caused by the addition of Spirulina platensis. Spirulina platensis didn't influence significantly on the traits water, fats, water retention, pH2 and loss of weight in heat treatment.

**38.** Nadezhda Palova, Dimitrinka Krusheva, Radka NEDEVA, **Yordan Marchev**, 2017, Influence of Pasture Composition and Weather Conditions on the Productivity

and Behavioral Reactions of Pigs of East Balkan Breed, *Journal of Tekirdag Agricultural Faculty*, 104-109

In the Agricultural Experimental station- Sredets, in Strandzha region, a study was conducted with two groups of 10 pigs of East Balkan breed. The experiment began after weaning at 60 days of age (8,91 and 8,81 kg) and continued to the age of 123 days (28,02 and 26,48 kg live mass). The period from May (spring) to the end of August (summer) was covered. The purpose of this study was to investigate the productivity and some behavioral reactions of East Balkan pigs depending on the composition of the pasture and weather conditions. The pastures in Strandzha are not highly productive - from 890 to 1320 kg/daa and with low nutritional value - the protein content ranges from 8,89 to 12,1 % in the spring and from 5.53 to 5.91% during the summer. Growing pigs in the control group have achieved average daily gain of 0.155 kg throughout the whole period and the pigs from the experimental group 0.144 kg. This indicating that the various chemical and botanical composition of the herbage as well as herbage yield did not significantly affect the live weight of animals. Major influence on the productivity and behavior of piglets from the East Balkan breed have weather conditions during the season. The behavior of the two groups of pigs was observed for two consecutive days for 8 hours during the spring season (May) and summer (July). In the spring, the activity of the animals of both groups (83% and 89%), was higher compared to the summer (62% and 73%).

**39. YordanMarchev, Mihail Chervenkov, Vania Mladenova, Desislava Abadjieva, Elena Kistanova, 2017, Changes in pre and post puberty levels of progesterone, estradiol and ghrelin in gilts, Bulgarian Journal of Agricultural Science, 23 (no 4), 644-647.**

The onset of puberty in pigs is a physiological process influenced by many factors. Some of the most important among them are age, breed, nutrition, technology of breeding, seasons and more. The reproductive system is particularly sensitive to energy reserve and metabolic status of the organism. In recent years it was discovered the role of so-called "metabolic" hormones (leptin and ghrelin) performing interaction between energy reserves and fertility. The purpose of this study was to characterize the changes in pre- and post-puberty levels of progesterone, estradiol and ghrelin in blood sera of gilts from different crossbreeds. An evaluation of the physiological maturity in gilts from LW x L (Large White x Landrace) crossbreed (n=10) and newly developed breed group (developed in the Agricultural Institute – Shumen, Bulgaria) (NBG) (Danube White x Landrace) (n=10), by comparison of the blood serum levels of progesterone, estradiol and ghrelin was carried out. It was established a significantly higher progesterone level ( $p < 0.001$ ) in the blood sera of LWxL gilts at the age of 210 days (3 ng/ml), compared with that of the age of 165 days (0.98 ng/ml). Similar data were obtained in the NBG – 2.68 ng/ml at the age of 220 days and 0.66 ng/ml at the 160 days old gilts. In the LWxL gilts estradiol levels significantly ( $p < 0.001$ ) increase from 113 pg/ml at 165 days of age to 130 pg/ml at 210 day, in NBG gilts the increase was respectively from 77.4 pg/ml at 160 day to 156.8 pg/ml at 220 day. There was a weak negative correlation between ghrelin and progesterone levels in pre pubertal period in both breeds ( $rp = -0.31$  for LW x L and  $rp = -0.28$  for NBG). However, at the post puberty there was a weak to moderate positive correlation between the two hormones in both breeds ( $rp = 0.34$  for LWxL and  $rp = 0.42$  for

NBG). There was no correlation between the levels of estradiol and ghrelin before and after puberty onset in each breed.

**40. Marchev, J.** Doneva, R. Dimitrova, D, 2018, East Balkan swine – autochthonous Bulgarian pig breed, Archivos de Zootecnia , Proceedings IX Simposio Internacional sobre el Cerdo Mediterráneo: 61-65.

The East Balkan Swine (EBS) is the last remained aboriginal pig breed in Bulgaria. It is a lard-type swine similar by phenotype to the wild boar with excellent adaptability to extensive conditions. Nowadays (2016) the population size of the breed is 1114 sows and 48 boars and for that reason the East Balkan Swine is categorized as endangered maintained. The breed inhabits forest parts of the country on the East slopes of Stara Planina Mt. (the Balkan) and Strandzha Mt. Similarly to the wild pig the local pig of the East Balkan breed is characterized by a late onset of maturity - the age at first farrowing is over 500 days. Throughout their reproductive this local breed produces in average 5.2 litters. The prolificacy varies from 6 to 8 live-born piglets and 5-6 piglets at weaning. EBS reaches live body weight of 100 kg for about 14 months. Average values characterizing carcass quality at 100 kg body weight are as follows: - carcass - 56.7 kg (determined after removal of the skin, head, legs to the hock and elbow, all the viscera), total meat with bones - 41.8 kg, (73.4% of carcass) and fat - 15.08 kg (26.6% of carcass).

**41. Марчев, Й.,** 2016, Ефект от различни схеми на кръстосване на свине майки от Източнобалканската порода с нерези Дунавска бяла и Голяма бяла върху репродуктивните показатели, Статията е докладвана на научна конференция „Иновации в аграрната наука за ефективно земеделие” Шумен 2016. Жив .науки, под печат,  
**Yordan Marchev,** 2016, Effect of different crossbreeding schemes of the East Balkan sows with boars of the Danube White and Large White breeds on the reproductive ability , Journal of Animal Science, in press.

An evaluation of the reproduction parameters using two variants of crossing was made: 1. Industrial crossbreeding of sows of the East Balkan breed and boars of the Danube White and Large White breeds, 2. Reversible crossing. The ♀EBSx♂LW and ♀EBSx♂DW females were covered with boars from the East Balkan breed.

The results obtained show that the industrial crossbreeding has influenced in a positive aspect for all monitored sings. A positive effect has been established in the crossbreeding of the East Balkan breeds with Large White breeds - of 0.8 for live births, 169.1 g for live birth weight, 1.1 in weaning, and especially in live weight at weaning where the difference of 5.352 kg is significance ( $P \leq 0,01$ ). In the case of reversible crossing, the sows of EBSxLW origin a tendency for a higher number (9.8) live-born pigs exceeding with 0.5 pigs from the combination EBSxDW (9.3) was established. A tendency for higher growth rate through the suckling period of the pigs of ♀EBSxLW x ♂EBS origin has been established expressed by the higher live weight at weaning where the difference with those ♀EBSxDW x ♂EBS was 0.848 kg.

**42. Йордан Марчев,** Живко Накев Надежда Палова, Теодора Попова, Д.Крушева, 2017, Състав на трупа на Източнобалкански свине и кръстоски с породата Голяма бяла

отглеждани при традиционна технология, Статията е докладвана на научна конференция „Иновации в аграрната наука за ефективно земеделие” Шумен Животновъдни науки, под печат

**Y. Marchev, J. Nakev, N. Palova, T. Popova, D. Krusheva, 2017, Carcass composition of East Balkan pigs and crosses with Large White breed rearing by traditional technology, Journal of Animal Science, in press.**

An investigation with 10 East Balkan and 6 crosses EBSxPLW fattened pigs was conducted. The animals were rearing by traditional technology on pasture. The pigs were slaughtered at 120 kg live weight for establishing the carcass composition. The results obtained show that the carcass weight in pure-bred pigs in absolute and relative units is higher than that of crosses, but the relative share of meat with bones in crosses is more than 3.7% higher than purebred pigs. In both groups, the weight of the real ham and abdominal part occupy more than 20% of the carcass weight. Bigger differences are found for a real ham (11.86%), the abdominal part (7.48%), a neck shop (6.32%) and a waist part (3.92%). In crosses, the relative share of the real ham is 22.22% and the abdomen is 20.99%, while in purebred these two parts occupy 21.84% and 20.52% respectively. The results show that crosses produce a more standardized production in the thoracic and waist part of the carcass.