

**РЕЗЮМЕТА НА НАУЧНИ ТРУДОВЕ**  
**на доц. д-р Ганчо Ганчев Ганчев**

представени за участие в конкурс за академичната длъжност „Професор“ по „Хранене на селскостопанските животни и технология на фуражите“, област на висше образование 6. Аграрни науки и ветеринарна медицина, професионално направление 6.3.  
Животновъдство

**I. Научни публикации, които са реферирани и индексирани в световноизвестни бази данни с научна информация. (Показател В):**

1. Varlyakov, I., V. Radev, T. Slavov, **G. Ganchev**, 2013. Blood parameters in yearling sheep fed Paulownia (*Paulownia* spp.) leaves. *Agricultural Science and Technology*, 5, 4, 405-410. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<http://agriscitech.eu/wp-content/uploads/2014/05/013.pdf>

**Abstract.** A physiological experiment was conducted with three yearling sheep, Stara Zagora x Pleven Blackhead crosses, to establish the effect of feeding *Paulownia elongata* leaves on some blood parameters. The trial consisted of two periods: control and experimental. During the control period, yearling sheep were fed a ration of 1 kg barley and 1 kg meadow hay, and during the experimental period – dried *Paulownia elongata* leaves. Blood samples were collected from v. jugularis externa before feeding and 2.5 hours after feeding during both periods after allowing 10-day adaptation to the respective diet. The studied parameters were erythrocyte counts, leukocyte counts, blood glucose, total protein, albumin and globulins. The intake of *Paulownia* leaves resulted in statistically significant reduction in erythrocyte ( $p<0.05$ ) and leukocyte counts ( $p<0.001$ ). This was most pronounced in the postprandial hours. *Paulownia* leaves also provoked increased total serum protein concentrations on the account of both higher albumin and globulins. The albumin/globulin ratio was 0.29 regardless of the type of diet or the time of sampling – prior to or after feeding.

2. Yavuz, E., N. Todorov, **G. Ganchev**, and K. Nedelkov, 2015. The effect of feeding different milk programs on dairy calf growth, health and development. *Bulgarian Journal of Agricultural Science*, 21, 2, 384-393. ISSN: 1310-0351 - print, ISSN: 2534-983X - online.

[https://journal.agrojournal.org/page/en/details.php?article\\_id=433](https://journal.agrojournal.org/page/en/details.php?article_id=433)

**Abstract.** Object of this study was to evaluate the effect of quantity and duration of milk feeding in the first two months of life of dairy calves on their growth and development until 70 days of age. The experiment was carried out from September to November. Average ambient temperature varied from 8 to 17°C. Calves were kept in individual hutches with straw bedding. Sixty Black and White female calves (mean 38.4 kg live weight) were included in a 70-day trial to evaluate the effect of three milk feeding programs. Calves were allocated to treatments based on weight and date of birth and blood immunoglobulin (Ig) concentration on 2 days of age. Calves were fed pasteurized (60°C for 30 min) unsalable milk from antibiotic-treated cows at three levels:

- Low milk group (LM), totally 172 L to weaning on 49 days of age;
- Moderate milk (MM), 315 L milk to 56 days of age;

- High milk (HM) 416 L to weaning at 56 days.

All calves received 2 L high quality (above 50 g Ig/L) colostrum three times in the first day after calving, and medium or low quality colostrum, usually from second and third milking after calving, 3 times by 2 L during the second day of life. Calf starter with 19 % crude protein (CP) consisting of 50% whole maize grain and 50% pelleted protein concentrate (29 % CP) was offered free choice until 70 days of age to three groups of calves. Alfalfa hay was offered *ad libitum* after 35 days of age. Starter feed, hay and milk consumption were controlled on a daily basis during the trial. Live weight and size of calves were measured at birth, and at 35, 56 and 70 days of age. Health status and behavior were observed every day. Beginning of rumination was observed and duration of rumination was recorded on 53-56 and 67-70 days of age. Intake of starter feed after 35 days of age depended on level of milk feeding, but did not compensate shortage of energy at any of experimental milk feeding levels. Dry matter intake (DMI), net energy (FUG) intake and live weight gain (LWG) until 35 days of age were different ( $P < 0.05$ ) for groups of calves receiving 4, 6 or 8 L of milk. From 36 to 56 days of age starter DMI, FUG intake and LWG differed ( $P < 0.05$ ) only between LM and HM groups. The dry matter conversion ratio was higher for HM than LM group until 35 days of age, but not later. There were no significant differences ( $P > 0.05$ ) in FUG efficiency between groups during the different periods of the trial. Tendency for lower LWG after weaning of the HM group, compared to LM and MM groups was observed, which may be connected with lower digestibility of dry feeds or deposition of more fat into the body of calves. Size growth followed LWG, but differences between groups of calves were significant only after 35 days of age for withers height, and after 56 days of age for heart girth. Rumination time differed between groups only at 53-56 days of age. There were no differences in diarrhea, pneumonia and other illness among the groups. Fecal scores tended to be low (softer) in HM group, and LM calves tended to have more non feeding oral behavior and bellowing compared to other groups. After weaning, the growth, health condition, rumination and feed efficiency were equal for the three groups of calves. In conclusion abundant colostrum and milk feeding resulted in significant advancing in live weight and frame size growth during the first 35 days of life, before rumen development and increased dry feed intake. The calves' performance and health status were not affected by the level of milk feeding during the preweaning period. Experimental calves will be followed through the first lactation to see if treatments had any marked effect on future milk production.

3. Yavuz, E., N. Todorov, **G. Ganchev** and K. Nedelkov, 2015. Effect of physical form of starter feed on intake, growth rate, behavior, and health status of female dairy calves. Bulgarian Journal of Agricultural Science, 21, 4, 893-900. ISSN: 1310-0351 - print, ISSN: 2534-983X - online. <https://www.agrojournal.org/21/04-31.pdf>

**Abstract.** The aim of the experiment was to compare the effect of physical form of starter feed on growth and development of dairy calves until 70 days of age. Forty female Black and White calves at one day of age and average live weight (LW) of 39.2 kg are divided in four equal groups with respect to date of birth and LW. Calves were kept in individual hutches with straw bedding. Treatments were four physical forms of starter feed: a) Whole maize grain plus pelleted protein concentrate (WMP); b) Pelleted starter feed (PSF); c) Starter in meal form with coarsely grounded maize (MSF); and d) 95% MSF + 5 % Nutrilait (contains 35% whey powder) (MSN). The ingredient and nutrient composition of the four starter feeds were similar, except for replacing 5% of dry distiller's grain with soluble with Nutrilait in the starter feed for the fourth group. The calves from the 4 groups received per feeding 2 L colostrum the first two days,

gradually increasing the quantity of milk until 6 days of age, and 4 L per feeding unmarketable pasteurized whole milk afterwards until 56 days of age. First three days' liquid feed was provided three times a day, from 4 to 35 days of age twice, and from 36 to 56 days of age once per day. From 35 days of age all calves were provided alfalfa hay ad libitum. Intake of milk, starter feed, and hay was recorded every day. Live weight and frame size (withers heights and heart girth) were measured at birth, on 35, 56 and 70 days of age. Health status, fecal score, beginning of eating dry feed and rumination, time spent eating and ruminating and behavior of calves were observed and recorded. There were no significant differences in the intake of different starters, both pre- and post-weaning. Live weight gain, frame size gain and feed efficiency of calves receiving different starters feed were practically similar. There were no differences in health status and fecal scoring of calves from the four groups. Results showed that starter with whole maize grain and pelleted starter allowed similar intake, performance and health status to those of calves fed starters with coarsely ground maize. Inclusion of Nutrilait (whey) into the starter didn't affect the intake of starter and average daily gain of calves. There was a tendency for earlier initiation of rumination in calves receiving whole maize grain or pelleted starter, than in calves fed starters in meal form. Eating time was significantly longer, and there was a tendency for increasing rumination time, when calves received whole maize grain, compared to other starters. Starter of whole maize and pelleted supplement (protein, mineral and vitamin), and starter in meal form were cheaper than pelleted starter and starter with dry whey supplementation for improving palatability. In conclusion, the starter with equal ingredient and nutrient composition in coarsely ground or pelleted form, and starter of whole maize plus pelleted protein concentrate ensured equal gain, feed efficiency and health of calves. Chewing of feed was longer when whole maize was offered to calves.

4. Yavuz, E., N. Todorov, **G. Ganchev**, K. Nedelkov, 2015. The performance of female dairy calves fed texturized starters with different protein sources. *Agricultural Science and Technology*, 7, 1, 65-70. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.  
<https://agrisitech.eu/the-performance-of-female-dairy-calves-fed-texturized-starters-with-different-protein-sources/>

**Abstract.** The aim of the experiment was to determine the effect of inclusion of dry distillers' grain with soluble (DDGS) and canola meal, as replacement of soybean meal and sunflower meal in textured starter feed for dairy calves. The second object was to compare two starters with the same ingredient and nutrient content composed of whole maize grain (WMG) plus protein concentrate, versus mixture of WMG, pelleted DDGS, pelleted canola meal, and pelleted mineral-vitamin premix. A seventh-day experiment was carried out with 30 Black and White female calves weighing 39 kg at birth. Each calf received 2 L of high quality colostrum (above 50 mg immunoglobulin/L) three times during the first day and 2 L colostrum three times at the second day after birth. From 3 to 35 days of age, calves were fed 3 L pasteurized whole unsalable milk twice daily and from 36 to 56 days of age - once daily. Calves were allocated to three treatments based on the day of birth and weight at birth. The calves received texturized starter feed with different composition: 1) 50% whole maize grain (WMG) + 50% pelleted protein concentrate with soybean meal, DDGS and sunflower meal as protein sources for the first group (pBDS); 2) 50% WMG + 50% pelleted protein concentrate with DDGS and canola meal for the second group (pDC); 3) 50% WMG + 24.1% pelleted DDGS + 23.4%, pelleted canola meal + 2.5% pelleted mineral-vitamin premix for the third group (DCVp). Crude protein (CP) content of all three starters was 19.0 to 19.6%. From 1 to 35 days of age the average daily gain (ADG) was 606, 580 and 569 g respectively for pBDS, pDC and DCVp groups, and did not

differ ( $P>0.05$ ) among treatments. From 36 to 56 days of age the ADG was 719, 710 and 695 g ( $P>0.05$ ), and from 57 to 70 days 971, 964 and 943 g ( $P>0.05$ ) respectively for pBDS, pDC and DCVp groups. There were no significant differences in feed efficiency, fecal score, health status and behavior of calves receiving different starter feeds. Results of this trial indicated that it is possible to replace soybean meal plus sunflower meal with canola meal and dry distillers grain with soluble, without significant changes of ADG, feed efficiency and health status of calves. Performance of calves was approximately equal when fed DDGS and canola meal as ingredients of pelleted protein concentrate or as separate ingredient in a starter mixture of WMG, pelleted DDGS, pelleted CM and pelleted mineral-vitamin premix. When pelleted DDGS and pelleted canola meal is available, it is possible to use them directly as components of starter, instead of buying protein concentrate with the same protein sources. Starter feed containing whole maize grain, pelleted DDGS, pelleted canola meal, and pelleted mineral-vitamin premix was the cheapest, compared to the other tested starter feeds.

5. Nedelkov, K., N. Todorov, M. Simeonov, D. Girginov and **G. Ganchev**, 2017. In situ rumen degradability and intestinal digestibility of two different types of rapeseed meal. Bulgarian Journal of Agricultural Science, 23, 3, 462-466. ISSN: 1310-0351 - print, ISSN: 2534-983X - online.

<https://www.agrojournal.org/23/03-16.pdf>

**Abstract.** The rumen degradability and intestinal digestibility of rapeseed meal (RSM) produced in Bulgaria (Astra Bioplant Ltd., Slivopole, Rousse district) and in Romania (Expur Ltd., Slobozia) was determined. Three non-lactating Jersey cows with a body weight of  $436 \pm 18$  kg, fitted with rumen fistula and T-duodenal cannula were used. Three batches from each factory were taken in interval of 20 – 30 days in Bulgaria (RSMb-1, RSMb-2, RSMb-3) and in Romania (RSMr-1, RSMr-2, RSMr-3). RSM were incubated in the rumen for 0, 2, 4, 8, 16, 24 and 48 h in 6 replications. The effective degradability of DM was significantly lower for RSMr-3 compared to other samples ( $P<0.05$ ). The results for rapidly degradable fraction a of CP for all the batches of Bulgarian RSM (26 to 30%) were significantly higher than those of Romanian RSM ( $P<0.05$ ). The values for potentially degradable CP fraction b varied between 66% and 73% without any significant differences for either factories or batches ( $P>0.05$ ). The effective degradability of CP at different outflow rates ( $k=0.045$ ; 0.06; 0.08) for all the batches of Bulgarian RSM were approximately 4% higher than those for Romanian batches ( $P<0.05$ ). The intestinal digestibility of DM determined by mobile bag technique was higher for RSMb-3 compared to other batches of RSM ( $P<0.05$ ). The values for intestinal digestibility of CP varied between 74% (RSMr-1) and 80% (RSMb-2) without any significant differences ( $P>0.05$ ). The protein digestible in intestine (PDI) at outflow rate 0.06/h according to Bulgarian feed evaluation system was 165 g/kg DM for RSMb and 171 g/kg DM for RSMr. The protein balance in the rumen (PBR) of RSM was 111 and 82 g/kg DM, respectively. There is room for improvements of protein nutritive values especially for Bulgarian RSM by improving the toasting process. The protein nutritional values reported in the present experiment could be used instead of the data published abroad for RSM.

6. Mihaylova, M., **G. Ganchev**, Y. Fenerova, S. Laleva, N. Dimova, 2018. Influence of nutrition on the milk urea level in Bulgarian Brown Cattle breed cows. Bulgarian Journal of Agricultural Science, 24 (Supplement 1), 68-71. ISSN: 1310-0351 - print, ISSN: 2534-983X - online.

[https://journal.agrojournal.org/page/en/details.php?article\\_id=1011](https://journal.agrojournal.org/page/en/details.php?article_id=1011)

**Abstract.** The study was conducted during the regular milk control of cows from the Bulgarian Brown Cattle (BBC) breed from the Agricultural Institute - Stara Zagora herd for the months of July and October 2014. Animals were divided into two groups according to the daily milk level - Elite group with a daily milking density of over 20 kg and a First group with a milk density of up to 20 kg. The ration consists of a total mix ration that was provided in the feeding racks. The milk urea content was determined in the laboratory of the Agricultural Institute - Stara Zagora by the Angelov, Ibrsimov and Milashki's method (1999). Milk samples for analysis were taken during the morning milking of the cows and studied immediately. The results of the survey were statistically processed with the STATISTICA for Windows software package. The study provides the opportunity to supplement information on the impact of protein and energy levels on the ration for maximizing the use of protein feeds effectively and limiting nitrogen losses in the environment. Concentration of crude protein above 16% in the dairy cow diet with sufficient energy for microbial growth is associated with poor utilization of the protein – increase in urea level in milk above 20.0 mg/dl. Low levels of urea in milk – below 6.0 mg/dl are associated with insufficient amount of microorganism-accessible rumen protein (PBR), although the availability of enough energy in the diet.

7. Stoyanova, A., **G. Ganchev**, V. Kueva, 2019. Assess of the impact of fertilization on wheat protein and energy nutrition. LXII, 1, 443-449. ISSN 2285-5785, ISSN CD-ROM 2285-5793, ISSN Online 2285-5807, ISSN-L 2285-5785.

<https://www.researchgate.net/publication/333049172>

**Abstract.** The purpose of this study is based of assessing the influence of leaf fertilizers on the two common wheat varieties. The fertilization was started with the liquid fertilizers Lactifrost, Lactofol base and Wuxal Grano. These are leafy liquid fertilizers that are used to nourish crops. A basic fertilization with ammonium nitrate was also carried out. The study options are as follows: 1. Without fertilization; 2. Ammonium nitrate (N14); 3. Lactifrost – 1 l/da; 4. Lactifrost+Lactofol base – 1.0 l/da+0.5 l/da; 5. Lactofol base – 0.5 l/da; 6. Wuxal Grano – 0.400 l/da; 7. Wuxal Grano – 0.400 l/da+0.200 l/da. The results of study show that the crude protein content ranges from 128.50-143.94 g/kg DM in the Enola variety and from 115.93 to 127.34 g/kg DM in the Illico variety. The introduction of Wuxal Grano slurry increased the crude protein content by 9.1 and 12.0% relative to the control. As a result of the correlation analysis, a very high correlation ( $r=0.947-0.993$ ) was found between CP and PDI for both common wheat varieties.

8. Georgieva V., S. Chobanova, **G. Ganchev**, I. Manolov, D. Jarkov, M. Lalev, D. Stoianov, 2010. Effect of addition of multienzyme preparation VemoZyme®Plus on productive and slaughter parameters and meat composition of broiler chickens, fed wheat-corn-soybean meal diets. Agricultural Science and Technology, 2, 4, 197-201. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/325988382>

**Abstract.** An experiment, lasting 42 days, was made to study the effect of addition of Bulgarian multienzyme complex VemoZyme®Plus on productive and slaughter performance and chemical meat composition of broiler chickens, fed wheat-corn-soybean meal based diets. In this trial 120 male one day old chickens of „Ross 308” hybrid, kept in battery cages, divided into 4 groups (distributed equally in three repetitions in each group) were used: 1. Positive control, fed with balanced diet; 2. Positive control with addition of 0,05% VemoZyme®Plus. 3. Negative control, fed with diet, contains 5% less metabolizable energy (ME) and digestible essential amino acids

(DEAA)–lysine, methionine+cistine, treonine. 4. Negative control with addition of 0.05% by VemoZyme®Plus. Tested enzyme preparation had no significant effect on the live weight, feed conversion, slaughter indices, protein and fat composition in the white meat of broiler chickens, fed with balanced diets. Addition of VemoZyme ® Plus to the diets of diminished nutritive value, increases (compared to the same, without addition of VemoZyme ® Plus) with 8.0 (P<0.05) and 5.7% (P<0.05) live weight, respectively through the grower and whole 42 days period, improved feed conversion with 11.0 (P<0,05) and 4.7% (P>0,05) respectively through the grower and the whole fattening period, has a positive (P<0,05) effect on grill weight (with 6.5%), without significantly affecting percentage of protein and fat in the white meat, compared with the control group.

9. Ilchev, A., **G. Ganchev**, S. Chobanova, D. Kanakov, P. Petkov, I. Nikiforov, 2010. Age-related changes in mineral retention and excretion in starter and finisher pigs fed diets with and without exogenous phytase. *Agricultural Science and Technology*, 2, 4, 183-190. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/325988346>

**Abstract.** Five balance feeding trials were performed to evaluate age-related changes in nitrogen, phosphorus and calcium utilization in growing and fattening male castrated DanBred hybrid pigs. Two commercial phytase preparations were used: Optiphos and Natuphos at a dose of 0.01%. It was found out that with age, the amount of dietary nitrogen intake and nitrogen output in urine increased statistically significantly (P<0,05). The total nitrogen output was also higher. The retention of nitrogen decreased substantially with age. The supplementation of rations with phytase did not alter this tendency. Phytase added to feed improved phosphorus absorption by 28-34% and reduced its total output by 38-45%. The digestibility of calcium in pigs decreased with age, whereas its output in faeces became higher. There was no statistically significant difference between the effects of Optiphos and Natuphos.

10. Stoyanova, A., **G. Ganchev**, V. Kuneva, T. Dinev, 2015. Effect of herbicide treatment on energy and protein nutritive values of two varieties of common wheat grain. *Journal of Mountain Agriculture on the Balkans*, 18, 4, 679-790. ISSN: 1311-0489 - print, ISSN: 2367-8364 - online.

<https://www.researchgate.net/publication/331980335>

**Abstract.** The main aim of the present study was to analyze the influence of herbicides and a mixture of herbicides treatment on the nutritive values of two varieties of common wheat grain (Enola and Iliko). The trial was conducted in the experimental farm of the Agricultural Faculty of Trakia University, Stara Zagora, during years 2012-2014. The qualitative indices of the grain were assessed and on their basis the energy and protein nutritive values of the common wheat (*Triticum aestivum* L.) were calculated for ruminants and non-ruminants. For Enola variety the average content of raw protein is 13.8% higher than the same for Iliko variety.

The results for intestinal digestible protein (PDI) content showed that the products for crops treatment did not affect the PDI, fodder units for milk (FUM) and fodder units for growth (FUG) levels for both common wheat varieties. The values of the digestible and metabolizable energy varied in narrow range, which indicates that the products for crops treatment did not affect energy nutritive value of common wheat for swine and birds.

## II. Научни публикации, които са реферирани и индексирани в световноизвестни бази данни с научна информация. (Показател Г 3):

1. Georgieva G., S. Chobanova, **G. Ganchev**, D. Dimitrov, 2008. Effect of phytase supplementation to wheat-soybean diets with different nonphytate phosphorus content on the productivity, protein, phosphorus and calcium utilization, tibia ash content and histological structure in broiler chicken at an early age. Bulgarian Journal of Animal Husbandry, 5, 45-54. ISSN: 0514-7441 - print, ISSN: 2534-9856 - online.

<https://www.researchgate.net/publication/375869681>

**Abstract.** An 11-day experiment with 200 one-day old male broiler chickens (Ross 308), divided into 5 groups (each one repeated 4 times), was performed in order to determine the effect of phytase supplementation as Ronozymc P at 1000 PU/kg to wheat-soybean diets with a different nonphytate phosphorus (nPP) content from 0.45% to 0.30%, on the productivity, protein, phosphorus and calcium utilization, tibia ash content and tibia histological structure in broiler chickens. The chickens from the control group were fed on a diet with 0.45% nPP but without phytase supplementation. The results of the experiment showed that the live body weight and feed conversion ratio in the 11-day-old broiler chickens fed on wheat-soybean diets supplemented with phytase but with different nPP level (0.45-0.30%), did not differ significantly from the respective indices in the broilers fed on a non-supplemented diet at a normal (0.45%) nPP level. The effect of phytase supplementation was the strongest positive and statistically significant vs. the other groups with regard to protein and phosphorus (P) utilization in the diets with the lowest nPP level (0.30%) and to calcium (Ca) in the diets with 0.35% and 0.30% nPP. The phytase supplementation of wheat-soybean diets containing 0.40% and 0.35% nPP improved the tibia ash content and the proportion of P in it compared to those in the control chickens. The light microscopy of histological preparations from all 5 experimental groups showed that the general histological structure of bones was preserved in all chickens. The microstructural changes in the tibias of chickens from groups TV and V showed that there were initial structural changes in diaphyseal compacta evidencing an active calcium-phosphorus remodeling.

2. Ilchev, A., **G. Ganchev**, D. Pavlov, P. Valkova, I. Nikiforov, 2008. Investigation on the effect of different protein levels in rations on the nitrogen retention and excretion of growing pigs. Bulgarian Journal of Animal Husbandry, 5, 122-129. ISSN: 0514-7441 - print, ISSN: 2534-9856 - online.

<https://www.researchgate.net/publication/375873099>

**Abstract.** Balance experiments with 9 animals divided into 3 groups were conducted. Each experiment included a 5-day preliminary period and a 5-day analytical period during which the urine and faeces were collected. The animals were placed in special individual cages with a grid floor and double bed which allowed easy collection of urine and faeces. The animals were fed with 3 types of highly nutritive combined feeds. The control group was fed according to the requirements of "Danbred", for the animals of the 2nd group the content of crude protein (CP) was increased with 15 above the norms, and for the 2nd group the protein content of the combined feed was decreased to 85% compared to the norms. As a result of the study it was found that the decreasing of the CP level with 15% during the starter period had a strong negative effect on the average daily gain and feed efficiency. Increasing the CP level with 15% above the recommended norms increased the average daily gain with 15.8% and improved the feed effectiveness with 6%. The high level of protein in the mixtures increased both the water

intake and the amount of urine excreted. From 31.1% to 41.6% of the nitrogen consumed with the diet were excreted with the urine. During the starter period, from 15.7% to 18.9% of the nitrogen consumed with the feed was excreted with the faeces. With increasing the level of protein in the combined feeds the percent of the excreted nitrogen decreased.

3. Ilchev, A., **G. Ganchev**, 2011. Effect of dietary amino acid concentration on nitrogen balance in PIC hybrid pigs. *Agricultural Science and Technology*, 3, 2, 98-102. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/325988549>

**Abstract.** A balance trial was performed with 3 groups of three PIC hybrid pigs each fed 3 dietary levels of digestible amino acids – 85%, 100% and 115% of standard. The control group was fed according to nutrition standards (100%). The other two groups, received a ration with amino acid content lower or higher by 15%, respectively, compared to controls. The nutrition standards for digestible amino acid content of feeds for the PIC hybrid are perfectly adequate to the needs of animals. They allowed a daily retention of 25 g N and a relatively good utilization of feed protein. The digestible amino acid excess did not improve the nitrogen retention, but only increased its excretion with urine. The water intake and the amount of excreted urine of pigs were directly related to the dietary nitrogen concentration. They were found to increase parallelly to dietary digestible amino acids content.

4. Ilchev, A., **G. Ganchev**, 2011. Effects of different levels of dietary digestible amino acids on nitrogen retention and excretion in Topigs pig hybrids. *Agricultural Science and Technology*, 3, 3, 207-211. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/325988553>

**Abstract.** A balance trial was performed with three groups of Topigs hybrid pigs (n=3). Pigs received complete compound feeds. For the second (control) group digestible amino acid content was according to hybrid's nutrition standards (as per Guideline for feeding Topigs sows, 2001. Topigs International, BV). Groups I and III received a ration with digestible amino acid content lower or higher by 15%, respectively, compared to controls. Dietary digestible amino acids in rations for Topigs finisher pigs were more than the animals were able to utilize. Therefore, more extensive research for revision of nutrition norms is needed. The reduction of digestible amino acids in feeds by 15% did not have a negative effect on nitrogen retention and improved its utilization by 11.7% compared to animals fed as per guidelines. The lower digestible amino acid content reduced the nitrogen output with urine by more than 30% (P<0.05). Water consumption and urine output were directly related to dietary nitrogen concentration. Increasing the content of digestible amino acids resulted in higher levels of these indices. About 63% of dietary nitrogen remained non-utilized and is lost with excreta. The reduction of digestible amino acids in diets by 15% decreased nitrogen output by 6.35%.

5. **Ganchev, G.**, Ilchev, A., 2013. Comparative investigations on feeding efficiency in growing and fattening DanBred and Topigs hybrid pigs. *Agricultural Science and Technology*, 5, 4, 400-404. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/325988473>

**Abstract.** A balance trial was performed with two groups of Topigs hybrid pigs (n=4) and DanBred hybrid pigs (n=4). Each trial was of 10-day duration (5 days preliminary and 5 day experimental period, during which urine and faeces were collected). The pigs were fed total mix rations prepared in the Experimental base. DanBred hybrid pigs were fed in compliance to



Nutrients Standards for pigs in Denmark, 12-th edition, Copenhagen, July 2005. Feeding of Topigs hybrid pigs was done according to recommendations of Guideline for feeding Topigs sows (Topigs International, BV, 2001). Over the entire fattening period, DanBred hybrid pigs exhibited a higher daily nitrogen retention compared to Topigs pigs – by 5.5% on the average. Because of the higher nutrition norms during the different fattening stages DanBred pigs consumed more expensive compound feeds – by 10% on the average. The average costs for lean meat gain produced from Topigs pigs were by 8% lower than those from DanBred pigs. Provided that the other production costs in farms are identical, the rearing of Topigs hybrid pigs was evaluated as more profitable.

6. Yavuz, E., **G. Ganchev** and N. Todorov, 2015. Effect of physical form and protein source of starter feed on growth and development of dairy calves. *Agricultural Science and Technology*, 7, 2, 149-158. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/325988647>

**Abstract.** The objective of this paper was to review the literature on effects of different methods of processing of grain fraction of the starter feeds for young dairy calves, as well as providing another part of starter which is a source of protein, minerals and vitamins in different physical forms. The second aim was to discuss the impact of the main protein sources for starter feeds on performance of preweaning and postweaning dairy calves. The main criteria for assessment of physical form effect and sources of protein in the starter feeds were intake of dry feeds, daily live weight gain and frame size growth of calves, morphological and functional development of forestomachs, digestibility of feeds and health status of young calves. Data show big variations and lack of consistency of experimental results. Good results were achieved when calves were fed whole, ground, dry-rolled, pelleted and steam-flaked grains. It seemed that fineness of grinding and quantities of fine fraction were important for starter intake. Steam-flaking and grinding improved digestibility to the same extent, but whole grain stimulated chewing and improved rumen environment for bacteria growth. Soybean meal was the most palatable and ensured best performance of calves. Evidently, it is possible to replace soybean meal with rape seed, canola type meal, dry distillers grain with solubles (DDGS) and other protein sources which contain more fiber and are less digestible. However, it is difficult to appraise how much and at what conditions is it possible to replace completely or a maximum possible portion of soybean meal. Additional studies are needed to clarify interactions between physical form of starters, rumen fermentation environments and age of calves. Information for composition of diets is needed allowing inclusion of maximum amounts of canola meal, DDGS and sunflower meal, which are produced locally and are cheaper than soybean meal, without decreasing live weight gain and development of dairy calves.

7. **Ganchev G.**, E. Yavuz, N. Todorov, 2015. Effect of feeding program for first two months after birth of female calves on growth, development and first lactation performance. *Agricultural Science and Technology*, 7, 4, 389-401. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/325988497>

**Abstract.** The aim of this paper was to review the available literature examining the relationship between milk feeding method of dairy calves during pre-weaning period on their growth and development. We conclude that delayed and inadequate colostrum feeding can result in increased morbidity and mortality. The higher level of milk feeding for dairy calves has the potential to increase growth rates during the pre-weaning period, to reduce time needed to reach a necessary body weight at first calving and improve milk yield at first calving. Providing more milk

however, may decrease intake of solid feed during the period of feeding milk. So far is it not clear, whether it is possible to combine intensive liquid feeding with sufficient dry feed intakes at weaning to continue normal growth of calves; otherwise, what is the level of milk feeding allowing small, or even to avoid, slump in growth at weaning. It is not known what level of milk feeding plus free access to starter allows obtaining a high level of live body gain during the first two months necessary for enhancing future milk yield of heifer calves. Additional studies are needed to clarify effect of different levels of milk feeding and scheme of feeding female dairy calves on growth rate, development, feed efficiency and health status during pre-weaning and post weaning period.

8. Stoyanova, A., **G. Ganchev**, V. Kueva, 2016. Nutrition value of two grain common wheat. Scientific Papers. Series A. Agronomy, LIX, 421-425. ISSN 2285-5785, ISSN CD-ROM 2285-5793, ISSN Online 2285-5807, ISSN-L 2285-5785.

<https://www.researchgate.net/publication/331980249>

**Abstract.** The research was conducted during 2011-2014 in the experimental field of the Department of Plant Production in Agriculture Faculty at Trakia University, Stara Zagora, Bulgaria. In this study has examined the nutritional value of two common wheat – Diamond (by the varietal list of Bulgaria) and Bologna (Syngenta). Comparative analysis of grain varieties and options of treatment of crops with some herbicides and herbicidal compositions and was made. The results of these variants were analyzed: 1. Control - no treatment; 2. Axial one - 1000 ml/ha; 3. Lintur+Traksos 150 g/ha+1200 ml/ha - a tank mix; 4. Logran+Traksos 37.5 g/ha+1200 ml/ha - a tank mix; 5. Lintur+Axial 150 g/ha+900 ml/ha – tank mixture and 6. Logran+Axial 37.5 g/ha+900 ml/ha - tank mixture. At the varieties Diamond and Bologna has been found that after treatment with the herbicides content of the crude protein for the period of the field study is moving in the range of 153.5-169.4 g/kg DM variety Diamant and from 156.9 to 158.7 g/kg DM for variety Bologna. Products for weed control does not significantly affect the content of FUG and FUM in two varieties of grain wheat. Analysis of regressions showed high positive correlation between PDI and CP in two varieties ( $r=0.94-0.99$ ) for the entire study period. Significantly higher the correlation between FUG and DEE. Data analysis for the content of intestinal digestible protein (PDI) show that the herbicide does not affect the levels of PDI in the grain.

9. Stoyanova, A., **G. Ganchev**, V. Kuneva, 2018. Influence of foliar feeding of common wheat varieties on the nutritional value of the grain. Agricultural Science and Technology, 10, 4, 333-337. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/331980246>

**Abstract.** Two years of polls from the field trials of the Faculty of Agriculture, Trakia University, Stara Zagora, Bulgaria were used for the purpose of the survey. In the period 2015-2016, two varieties of common wheat (Apolon and Bolonga), treated by leaf liquid fertilizers, imported alone and in combinations were tested under field conditions. Main fertilization with ammonium nitrate was done. The variants of the experiments were as follows: 1) Without fertilization (Control); 2) Ammonium nitrate (N); 3) Lactifrost – 10.0 L/ha; 4) Lactifros + Lactofol base – 10.0 L/ha + 5.0 L/ha; 5) Lactofol base – 5.0 L/ha; 6) Wuxal Grano – 4.0 L/ha; 7) 140 Wuxal Grano – 4.0 L/ha + 2.0 L/ha. It was found that crude protein content ranged from 136.90 to 144.63 g/kg DM in the Apolon variety and from 129.98 to 145.12 g/kg DM in the Bologna variety. An increase in CP content was seen as a result of feeding with Lactifrost and Lactofol base, respectively, by 5.6% and 11.7% relative to the control. Treatment of common

wheat with liquid leaf fertilizers, however, does not lead to improvements in energy (metabolizable energy, digestible energy, feed unit for milk, feed unit for growth) and protein digestible in (small) intestine nutrition. In both varieties there were many positive and negative correlations between the investigated parameters: CP, CFAT, CF, DEE, FUM, FUG, PDI, Dep, MEp, DEpg and MEpg; in ruminants the same positive correlations for both varieties are between CP and PDI ( $p < 0.01$ ) and negative - between CP and FUM ( $p < 0.05$ ), and between CFAT and PDI ( $p < 0.05$ ); in nonruminants negative correlations exist between CF and the energy values (DEp, MEp, DEpg and MEpg) only in Apolon variety.

10. **Ganchev, G.,** A. Ilchev, A. Koleva, 2019. Digestibility and energy content of Paulownia (*Paulownia elongata* S.Y. Hu) leaves, *Agricultural Science and Technology*, 11, 4, 307-310. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/338124099>

**Abstract.** The aim of the study was to determine the digestibility and energy content of *Paulownia elongata* S. Y. Hu leaves after leaf fall. Leaves together with petioles were dried at room temperature and milled with a roughage mill before feeding to animals. A classical digestion trial was performed, with three rams weighing 55.4 kg on average, by determining the chemical composition of consumed feed, feed leftovers and excreted faeces. Digestibility was evaluated as difference in the amount of ingested nutrients and nutrients excreted with faeces and it was determined to be 50.72, 52.08, 31.63, 54.09, 55.15 and 56.06% for dry matter (DM), organic matter (OM), crude protein (CP), ether extract (EE), crude fibre (CF) and nitrogen-free extract (NFE). The energy value for ruminants calculated on the basis of chemical composition and established digestibility was 8.29 MJ digestible energy (DE)/kg DM, 6.55 MJ metabolizable energy (ME)/kg DM, 0.59 feed units for milk (FUM)/kg DM and 0.52 feed units for growth (FUG)/kg DM.

11. **Ganchev, G.,** A. Stoyanova, V. Kuneva, 2019. Evaluation of the influence of leaf fertilization the productivity and nutritive value wheat on the basis of mathematical-statistical analysis. *Bulgarian Journal of Agricultural Science*, 25 (Supplement 3), 35-41. ISSN: 1310-0351 - print, ISSN: 2534-983X - online.

<http://www.agrojournal.org/25/03s-06.html>

**Abstract.** Object of the present study are varieties of wheat Enola and Illico, their productivity under the influence of the applied fertilization during the growing season as well as nutritional and energy value of the grain. For fertilization with macro and micro elements are used foliar fertilizers Laktofol major and Wuxal Grano. The aim of the study is by two-way analysis of variance to analyze the impact of the factors variety and variations of the treatment on the nutritional value of two wheat varieties, establishing the power of influence on them independently action, and their interaction. According to the two-factor analysis of variance, both the influence of the two factors (variety and treatment options) separately and their interaction, statistically proven at a very high degree of certainty ( $p \leq 0.001$ ), is the influence on the grain yield indicator. The variety factor (88%) in 2015, followed by fertilization (88%) in 2016, had the strongest influence on the variation of the attribute. The greatest effect on the CP content of both varieties for both years was reported by Wuxal Grano treatment. For Enola, the increase was 15.5% in the first year and 3.9% in the second year. In Illico, the increase was higher in the second year – 9.1%, compared to the first year – 4.9%. Laktofol treatment resulted in an increase in CP content by 5.6% in the first year and by 1.8% in the second year at Enola

and by 7.5% in the second and 1.9% in the first year at Illico. Fertilizer application does not affect FUM, FUG and PDI content in ruminants and DE and ME in non-ruminants.

12. **Ganchev, G.,** V. Kuneva, A. Stoyanova, 2019. Nutrition and energy value of two wheat varieties. Bulgarian Journal of Agricultural Science, 25, (Supplement 3), 47-52. ISSN: 1310-0351- print, ISSN: 2534-983X - online.

<http://www.agrojournal.org/25/03s-08.html>

**Abstract.** Field experiment was conducted in the years 2014-2016 in the experimental field of Faculty of Agriculture, Trakia University, Stara Zagora. In an attempt included two varieties of common wheat – Diamond and Ingenio. Variants of the study are: 1. Control – Fertilizing with N 140 kg.ha<sup>-1</sup>; 2. Fertilizing with N 140 kg.ha<sup>-1</sup> + Laktofol base (1.0 l/ha). 3. Fertilizing with N 140 kg.ha<sup>-1</sup> + Wuxal Grano (400 ml/ha). 4. Fertilizing with N 140 kg.ha<sup>-1</sup> + Wuxal Grano (400 ml/ha) + Wuxal Grano (200 ml/ha). The applied liquid fertilizers for feeding during the growing season are enriched with micro elements. The leaf fertilizers used increase the CP content but have no effect on the PDI content of both varieties. An increase in the crude protein content of variants treated with liquid fertilizers has been reported. The calculated correlation coefficient in two varieties, which measures the strength of the relationship is  $r = 0.909$  at Diamond and  $r = 0.82$  ie there are a strong correlation. The applied products for fertilization the crops and the variety do not effect of the nutrition value of wheat for ruminants and non-ruminants.

13. **Ganchev, G.,** A. Ilchev, K. Nedelkov, 2020. Influence of different inclusion levels of corn dried distillers grains with solubles (DDGS) in the diet of growing pigs on the digestibility of nutrients. Bulgarian Journal of Agricultural Science, 26 (Supplement 1), 83-89. ISSN: 1310-0351 - print, ISSN: 2534-983X - online.

<http://www.agrojournal.org/26/01s-09.html>

**Abstract.** The objective of this study was to determine the total tract digestibility coefficients of growing pigs fed diets with different inclusion levels of corn dried distillers grains with solubles (DDGS) produced in Bulgaria. Four castrated male pigs from the Danube White breed with an average body weight of  $16 \pm 0.3$  kg, housed in individual metabolic cages, were used in the digestibility experiment. Four different diets were examined: 1) a basal diet (100 corn), consisting mainly of corn, (96.25% corn and 3.75% vitamins and minerals); 2) 60/40 DDGS diet, in which DDGS was included at 40%; 3) 40/60 DDGS diet, in which DDGS was included at 60%, and 4) DDGS based diet (100 DDGS), consisting mainly of corn DDGS (97.5% DDGS and 2.5% vitamins and minerals). The apparent total tract digestibility coefficients of dry matter (DM), crude protein (CP), ether extracts (EE), crude fibers (CF), and nitrogen free extract (NFE) were determined. Increasing the inclusion level of DDGS in the rations of growing pigs significantly reduced the digestibility coefficients of the main nutrients - CP, EE, and NFE, but did not affect the digestibility of CF.

14. **Ganchev G.,** A. Ilchev, K. Nedelkov, 2022. Influence of different inclusion levels of wheat dried distiller's grains with soluble (DDGS) in the diet of growing pigs on the digestibility of nutrients. Bulgarian Journal of Agricultural Science, 28, 3, 510-515. ISSN: 1310-0351 - print, ISSN: 2534-983X - online.

<http://www.agrojournal.org/28/03-21.html>

**Abstract.** The objective of this study was to determine the total tract digestibility coefficients of growing pigs fed diets with different inclusion levels of wheat dried distillers grains with soluble

(wDDGS) produced in Bulgaria. Four castrated male pigs from the Danube White breed with an average body weight of  $34 \pm 0.82$  kg, housed in individual metabolic cages, were used in the digestibility experiment. Four different diets were examined: 1) a basal diet (100 wheat), consisting mainly of wheat (96.7% wheat and 3.3% vitamins and minerals); 2) 60/40 DDGS diet, in which DDGS was included at 40%; 3) 40/60 DDGS diet, in which DDGS was included at 60%, and 4) DDGS based diet (100 DDGS), consisting mainly of wheat DDGS (97.85% DDGS and 2.15% vitamins and minerals). The apparent total tract digestibility coefficients of dry matter (DM), crude protein (CP), ether extract (EE), crude fibers (CF), and nitrogen-free extracts (NFE) were determined. By increasing wheat DDGS in the rations of growing pigs, a significant reduction in digestibility coefficients of the main nutrients (CP, EE, CF, and NFE) was observed.

15. Bazitov, R., M. Mihaylova, **G. Ganchev**, 2023. Influence of nitrogen fertilization on the energy value of maize grain in non-ruminants. *Agricultural Science and Technology*, 15, 2, 46-50. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/375868483>

**Abstract.** Maize is the most widely spread energy source used in rations for farm animals and poultry, especially in countries in America, Southern Europe and Asia, where maize grain is the main cereal used for feed. The quality of maize grain is formed under the influence of several interrelated factors. The aim of the study is to determine the effect of different rates of nitrogen fertilization on the chemical composition and energy value of maize grain grown under irrigation conditions in non-ruminants. The study was conducted in the experimental field of the Agricultural Institute - Stara Zagora under irrigation conditions on cinnamon-meadow soil with maize for grain, medium late hybrid LG 35.36 with density of crops - 70000 plants per hectare. The study includes the following four treatments of fertilization: 1 experimental variant  $N_0P_{80}K_{60}$  – non-fertilizer control, 2 experimental variant  $N_{100}P_{80}K_{60}$  – fertilization with 100 kg  $N \cdot ha^{-1}$ , 3 experimental variant  $N_{150}P_{80}K_{60}$  – fertilization with 150 kg  $N \cdot ha^{-1}$  and 4 experimental variant  $N_{200}P_{80}K_{60}$  – fertilization with 200 kg  $N \cdot ha^{-1}$ . Nitrogen fertilizer was applied during the vegetation of the crop in phase 3-5 leaf, and phosphorus and potassium fertilizers in rates 80 kg  $P_2O_5 \cdot ha^{-1}$  and 60 kg  $K_2O \cdot ha^{-1}$  in the main tillage. During the vegetation of the maize, pre-irrigation humidity of 80-85% of field capacity (FC) was maintained by 3 waterings. As the fertilization rate increases, the crude protein content in the maize grain also grows up. During the treatment with the highest fertilizer rate of 200 kg  $N \cdot ha^{-1}$ , 9.5% per 1 kg of dry matter (DM) was obtained, followed by the treatment with 150 kg  $N \cdot ha^{-1}$  – with a value of 9.1% per 1 kg of dry matter. The content of crude fiber in the grain of maize with increasing fertilization rate decreases, being the smallest in the treatment with rate 100 kg  $N \cdot ha^{-1}$  – 0.8% per 1 kg of dry matter. The fertilization rate does not have a significant effect on the content of digestible and metabolite energy in corn grain grown under irrigated conditions in pigs and poultry.

16. **Ganchev, G.**, 2023. Effect of physical form of starter feed on nutrient digestibility of dairy calves. *Agricultural Science and Technology*, 15, 4, 28-33. ISSN: 1313-8820 - print, ISSN: 1314-412X - online.

<https://www.researchgate.net/publication/377241022>

**Abstract.** The present experiment aimed to compare the effect of the physical form of a starter for dairy replacement calves on some rumen fermentation parameters. Nine male calves 4 days old and averaging 41.3 kg (SD = 3.6) were divided into three groups. The calves were housed in individual hutches bedded with straw. The calves were weaned at the age of 56 days of age and remained in the experiment until they reached 70 days. Three different physical forms of starter

feeds were tested: 1) Ground starter – starter in meal form with coarsely ground maize (GS); 2) Pelleted starter (PS); and 3) Textured starter – a mixture of whole maize grain plus pelleted protein concentrate (TS). The ingredients and chemical composition of the three starter feeds were similar. The calves from all groups received 4 L of whole milk until 56 days of age. The liquid feed was provided twice daily from 4 to 35 days of age, and once daily from 36 to 56 days. From 35 days of age, calves were offered a free choice of alfalfa hay. OM digestibility was lower in calves that received ground starter compared to calves fed pelleted starter and textured starter. Apparent total tract digestibility of CP was the lowest in calves fed GS compared to those receiving PS and TS ( $P<0.05$ ). No statistically significant difference in CP digestibility was observed between PS-fed and TS-fed calves. EE digestibility was significantly lower in calves that received GS compared to those that received PS ( $P<0.05$ ), but not different from EE digestibility in calves fed TS. The highest EE digestibility was that in PS-fed calves. CF digestibility was highest in calves that received PS and the lowest in those fed GS, with significant differences ( $P<0.05$ ). There was no significant difference in NFE digestibility among tested physical forms of starter feeds.

### **III. Статии и доклади, публикувани в нереферирани списания с научно рецензиране или публикувани в редактирани колективни томове. (Показател Г):**

1. Ilchev, A., **G. Ganchev**, D. Pavlov, P. Valkova, I. Nikiforov, 2008. Investigation of the effect of different levels of protein in diets on retention and excretion of nitrogen at pig through finishing period. International Scientific conference, St. Zagora, June 5-6, CD, Proceeding book, Animal studies, 3, 8-14. ISBN: 978-954-9329-44-5.  
<https://www.researchgate.net/publication/331981736>

**Abstract.** The experiment was performed on 9 young pigs (Danbred). Nitrogen balances were determined by the simple balance method. The pigs, divided into three groups (three head each), were kept and fed individually. They received complete diets. The control diet contained level of protein according with the norm of Danbred hybrids. In the experimental diets a level of protein was increase with 15% for second group and decrease with 15% for third group. The high levels of protein in complete diets increase the water consumption and quantity of excreted urine. With urine excreted from 47.1 to 55.8% of intake with diets nitrogen. The level of crude protein has not effect on quantity of excreted nitrogen with fecal. Excreted nitrogen with fecal average 13.0% from intake nitrogen with diets. Increase of quantity of nitrogen intakes increases total nitrogen excretion. Necessary specifying the norms for crude protein for finisher period for “Danbred” hybrids.

2. Ilchev, A., **G. Ganchev**, D. Pavlov, S. Chobanova, 2008. Investigation of the effect of different levels of protein in diets on retention and excretion of nitrogen at pig through growing period. International Scientific Conference, St. Zagora, June 5-6, CD, Proceeding book, Animal studies, 3, 1-7. ISBN: 978-954-9329-44-5.  
<https://www.researchgate.net/publication/331981841>

**Abstract.** The experiment was performed on 9 young pigs (Danbred). Nitrogen balances were determined by the simple balance method. The pigs, divided into three groups (three head each), were kept and fed individually. They received complete diets. The control diet contained level of protein according with the norm of Danbred hybrids. In the experimental diets a level of protein increase with 15% for second group and decrease with 15% for third group. The increase level of

protein with 15% has not effect on average daily gain and feed efficiency. The high levels of protein in complete diets increase the' water consumption and quantity of excreted urine. With urine excreted from 38.8 to 47.7% of intake with diets nitrogen. With fecal excreted from 14.6 to 16.0% of intake with-diets nitrogen. Increases of quantity of nitrogen intakes decrease nitrogen excretion. Necessary specifying the norms for crude protein for finisher period for “Danbred” hybrids.

3. Ilchev, A., **G. Ganchev**, B. Bivolarski, D. Ilcheva, 2011. Reduction of environmental pollution through decrease of nitrogen content of pig feeds. Journal of Balkan Mountain Agriculture on the Balkans, 14, 3, 376-389. ISSN: 1311-0489 - print, ISSN: 2367-8364 - online.

<https://www.researchgate.net/publication/370952854>

**Abstract.** Serial balance trials were performed with three groups of castrated male Danbred and Topigs hybrid pigs, with three dietary levels of digestible amino acids – 85%, 100% and 115%. The control group was fed in compliance with recommendations for feeding the respective hybrid (100%). The other two groups received ration whose nitrogen content was by 15% lower or higher vs controls. The high dietary protein content increased water intake and the amount excreted urine. On the average 20% of dietary nitrogen during the starter period, 17% during the grower and 16% during the finisher period were excreted with faeces. The main of nitrogen was excreted with urine. The increased content of crude protein in rations increased statically significantly the urine nitrogen output. The feeding standards for digestible amino acids of Danbred and Topigs hybrids during the grower and finisher periods exceeded the potential of animals to utilize them. The reduction of norms by 10-15% in these two periods reduced the total nitrogen output by 16% without significant change in nitrogen retention. Dietary nitrogen levels over the standards did not improve nitrogen retention but increased nitrogen output in faeces and urine, but contributed to environmental pollution.

4. Koleva A., Dobрева K., Stoyanova M., Denev P., Damianova S., Ilchev A., Tasheva S., **Ganchev G.**, Pavlov D., Angelov B., Stoyanova A., 2011. Paulownia – A Source of Biologically Active Substances 1. Composition of Leaves. Journal of Mountain Agriculture on the Balkans, 14, 5, 1061-1068. ISSN: 1311-0489 - print, ISSN: 2367-8364 - online.

<https://www.researchgate.net/publication/331980077>

**Abstract.** The amount of a protein (8.8%) and cellulose (20.0%) in leaves of paulownia (*Paulownia elongata*) was determinate. Mineral composition was identified; the highest was calcium content (19.4 g/kg) of macroelements, and - iron (245.6 mg/kg) and manganese (139.8 mg/ kg) of microelements.

5. Koleva A., Dobрева K., Stoyanova M., Denev P., Damianova S., Ilchev A., Tasheva S., **Ganchev G.**, Pavlov D., Angelov B., Stoyanova A., 2011. Paulownia – A Source of Biologically Active Substances 2. Amino Acid Composition of Leaves. Journal of Mountain Agriculture on the Balkans, 14, 5, 1078-1086. ISSN: 1311-0489 - print, ISSN: 2367-8364 - online.

<https://www.researchgate.net/publication/331980218>

**Abstract.** The amino acid content of leaves from Paulownia (*Paulownia elongata*) has been investigated. The highest is the content of glutamic acid (16.04%), asparagines acid (11.30%), leucine (10.16%), alanine (7.11%), proline (6.39%), phenylalanine (6.24%), serine (6.01%) and valine (5.42%).

6. Dimova, N., M. Mihailova, **G. Ganchev**, 2012. Effect of hydrothermal protected soybean meal on milk yield and milk composition of grazing sheep. International Scientific on-line journal "Science and Technologies", Publisher "Union of Scientists – Stara Zagora" II, 5, Animal studies & Veterinary Medicine, 35-39. ISSN: 1314-4111.

<https://www.researchgate.net/publication/331980325>

**Abstract.** Soybean meal is the most commonly used in almost all growing and highly productive animals. Its use as an additive in sheep kept under grazing conditions is not well understood. The aim of this study was to trace the impact of protects soybean meal as protein source in rations for ewes on milk yield and composition of their milk. In an experiment were included 27 ewes from Syntetic population bulgarian milk from the flock of Agricultural Institute - Stara Zagora. Experience was held in 2011 and lasted 29 days. Controlled the following parameters: milk yield of the morning milking, urea in milk fat, non-fat solids, density, lactose, protein and pH. The inclusion of soybean meal as protein source in rations for ewes in the period after 4-5-th month of lactation increases the milk yield and urea content in milk. There were no significant correlations between the content of urea in milk and other milk constituents.

7. Nedelkov, K., M. Simeonov, N. Todorov, **G. Ganchev**, 2015. Influence of some non-genetic factors affecting the fertility rate of ewes from Pleven blackhead breed. Bulgarian Journal of Animal Husbandry, 4, 3-10. ISSN: 0514-7441 - print, ISSN: 2534-9856 - online.

[https://animalscience-bg.org/page/en/details.php?article\\_id=237](https://animalscience-bg.org/page/en/details.php?article_id=237)

**Abstract.** The aim of the present study was to estimate the influence of some non-genetic factors on the fertility rate in 1801 ewes from the Pleven Blackhead breed. The results show that ewes inseminated in 2011 and lambed in 2012 had a higher fertility rate ( $P < 0.01$ ) in comparison with the ewes lambed in 2011 and 2013, which indicated that the year had a great influence over the fertility rate. Four years old ewes had a significantly higher fertility rate than the ewes at 2 and 3 years of age ( $P < 0.01$ ). The fertility rate of ewes with BCS from 2.6 to 3.5 at the beginning of the breeding period was significantly higher as compared to ewes with BCS over 3.6 ( $P < 0.01$ ), indicating that the fertility rate was directly connected with the body condition of ewes at the insemination. The ewes weighing 56 and 65 kg had a higher fertility rate in comparison with the ewes with live weight under 56 kg and over 66 kg ( $P < 0.01$ ). The standard deviation of the studied parameters pointed out a wide variation of the traits, regardless of the body condition and live weight of ewes at the insemination. The analysis of the factors shows that the factors like year, age of ewes, flock, nutrition, live weight and body condition score of ewes have an average degree of impact over the fertility rate ( $P < 0.05$  and  $P < 0.01$ ). The interaction between the factors - year x age and age x flock, had a significant influence ( $P < 0.01$ ) on fertility rate.

8. Stoyanova, A., **G. Ganchev**, S. Stoyanova, 2015. Energy and protein nutrition of grain of two common wheat for pig and poultry. Аграрная наука – сельскохозяйственному производству Сибири, Казахстана, Монголии, Беларуси и Болгарии, XVIII Международная научно-практическая конференция, Новосибирск, 16-17 сентября, 11-13. ISBN: 978-601-7239-16-9, ISBN: 978-601-7239-15-2.

**Abstract.** The main purpose of this study was to analyze the effect of treatment with some herbicides and herbicide mixtures of two varieties of common wheat Apolon and Ingenio on the nutritional value of the grain. The experiment was carried out in the experimental field of the Faculty of Agriculture, Trakia University, Stara Zagora in the period 2012-2014. It was found that application of herbicides tested in two varieties of common wheat, no significant influence on the content of qualitative traits. The values of digestible and metabolizable energy vary in a range,



which indicates that the products for the treatment of crops and varieties not influence energy nutrition of wheat for pigs and poultry

9. Stoyanova, A., **G. Ganchev**, S. Stoyanova, 2015. Energy and protein nutrition of grain of two common wheat for ruminants. Аграрная наука – сельскохозяйственному производству Сибири, Казахстана, Монголии, Беларуси и Болгарии, XVIII Международная научно-практическая конференция, Новосибирск, 16-17 сентября, 14-16. ISBN: 978-601-7239-16-9, ISBN: 978-601-7239-15-2.

**Abstract.** The main purpose of this study was to analyze the effect of treatment with some herbicides and herbicide mixtures of two varieties of common wheat Apolon and Ingenio on the nutritional value of the grain. The experiment was carried out in the experimental field of the Faculty of Agriculture, Trakia University, Stara Zagora in the period 2012-2014. The results for the content of digestible protein in the gut (PSC) show that the applied products for crop treatment do not affect the levels of PSC, milk feeding units (CU) and fodder growth units (CU) in both wheat varieties. The values of digestible and exchange energy vary within narrow limits, which shows that the products for the treatment of crops and varieties do not affect the energy nutrition of wheat.

10. Stoyanova, A., V. Kuneva, **G. Ganchev**, M. Georgiev, 2018. Evaluation of energy and protein nutrition of common valuation wheat varieties treated whit leaf fertilizers valuation. 2<sup>nd</sup> International Conference on Food and Agricultural Economics 27-28th April 2018, Alanya, Turkey, 298-304. ISBN: 978-605-245-196-0.

<https://ageconsearch.umn.edu/record/296724/files/298-304%20Full.pdf>

**Abstract** The research was conducted during 2015-2016 in the experimental field of the Department of Plant Production in Agriculture Faculty at Trakia University, Stara Zagora, Bulgaria. The aim of this study is to investigate the effect of leaf fertilizer on the productivity of common wheat. In this study has examined the nutritional value of two common wheats – Diamond (by the varietal list of Bulgaria) and Ingenio (Syngenta). A comparative analysis of the results obtained from the treatment of varieties of common wheat with leaf fertilizers was made. Energetic and protein nutrition of ruminant wheat was evaluated in 1 kg of dry matter. Protein value of feed is extremely important for their nutritional value. The protein value of the feed is related to the bioavailability of the protein contained therein. The boundaries in which the protein values of the various feeding variants with different leaf fertilizers. The crude protein content ranges from 160.3 to 167.0 g/kg of dry matter (DM) for the Diamond variety and from 144.4 to 151.8 g/kg of dry matter Ingenio variety. On average, the content of raw protein in Diamond variety is higher by 10.7% of the found content of Ingenio variety.