ISSN 2518-1483 (Online),
ISSN 2224-5227 (Print)

2019 • 5

ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
ҰЛТТЫҚ ҒЫЛЫМ АКАДЕМИЯСЫНЫҢ

БАЯНДАМАЛАРЫ

ДОКЛАДЫ

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН

REPORTS

OF THE NATIONAL ACADEMY OF SCIENCES
OF THE REPUBLIC OF KAZAKHSTAN

PUBLISHED SINCE 1944

ALMATY, NAS RK

ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
ҰЛТТЫҚ ҒЫЛЫМ АКАДЕМИЯСЫНЫҢ
БАЯНДАМАЛАРЫ **2019 • 5**

«Қазақстан Республикасы Ұлттық ғылым академиясының баяндамалары»
ISSN 2518-1483 (Online),
ISSN 2224-5227 (Print)

Меншіктенуші: «Қазақстан Республикасының Ұлттық ғылым академиясы» Республикалық қоғамдық бірлестігі (Алматы қ.)
Қазақстан республикасының Мәдениет пен ақпарат министрлігінің Ақпарат және мұрағат комитетінде 01.06.2006 ж. берілген **№5540-Ж** мерзімдік басылым тіркеуіне қойылу туралы куәлік

Мерзімділігі: жылына 6 рет.
Тиражы: 500 дана.

Редакцияның мекенжайы: 050010, Алматы қ., Шевченко көш., 28, 219 бөл., 220, тел.: 272-13-19, 272-13-18,
http://reports-science.kz/index.php/en/archive

Типографияның мекенжайы: «Аруна» ЖК, Алматы қ., Муратбаева көш., 75.

ДОКЛАДЫ **2019 • 5**
НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН

Доклады Национальной академии наук Республики Казахстан»
ISSN 2518-1483 (Online),
ISSN 2224-5227 (Print)

Собственник: Республиканское общественное объединение «Национальная академия наук Республики Казахстан» (г. Алматы)
Свидетельство о постановке на учет периодического печатного издания в Комитете информации и архивов Министерства культуры и информации Республики Казахстан **№5540-Ж**, выданное 01.06.2006 г.

Периодичность: 6 раз в год.
Тираж: 500 экземпляров

Адрес редакции: 050010, г.Алматы, ул.Шевченко, 28, ком.218-220, тел. 272-13-19, 272-13-18
http://reports-science.kz/index.php/en/archive

Адрес типографии: ИП «Аруна», г.Алматы, ул.Муратбаева, 75

REPORTS **2019 • 5**
OF NATIONAL ACADEMY OF SCIENCES OF THE
REPUBLIC OF KAZAKHSTAN

Reports of the National Academy of Sciences of the Republic of Kazakhstan.
ISSN 2224-5227
ISSN 2518-1483 (Online),
ISSN 2224-5227 (Print)

Owner: RPA "National Academy of Sciences of the Republic of Kazakhstan" (Almaty)
The certificate of registration of a periodic printed publication in the Committee of Information and Archives of the Ministry of Culture and Information of the Republic of Kazakhstan N 5540-Ж, issued 01.06.2006

Periodicity: 6 times a year
Circulation: 500 copies

Editorial address: 28, Shevchenko str., of.219-220, Almaty, 050010, tel. 272-13-19, 272-13-18,
http://reports-science.kz/index.php/en/archive

Address of printing house: ST "Aruna", 75, Muratbayev str, Almaty

REPORTS OF THE NATIONAL ACADEMY OF SCIENCES OF THE REPUBLIC OF KAZAKHSTAN
ISSN 2224-5227 **https://doi.org/10.32014/2019.2518-1483.135**
Volume 5, Number 327 (2019), 21 – 24

UDC: 636.20./28.087

A.A. Spanov[1], D.M. Bekenov[1], D.T. Sultanbai[1], G.K.Zhaksylykova[1], A.D.Baimukanov[2]

[1]Educational Scientific and Production Center Bayserke-Agro LLP, Almaty region, Kazakhstan;
[2]Russian State Agrarian University - Moscow Agricultural Academy named after K.A. Timiryazev, Moscow, Russian Federation
abzal16@mail.ru,unpcbayserke-agro@mail.ru, darinasultan@lenta.ru, gulnurzh@ro.ru, aidartaidar98@mail.ru

THE EFFECT OF CANOLA MEAL APPLICATION IN THE DIET OF DAIRY COWS OF HOLSTEIN BREED IN BAYSERKE AGRO LLP

Abstract. The impact of canola meal on dairy productivity and qualitative indicators of milk in Holstein breed cows was studied under the conditions of Bayserke Agro LLP. The prime cost of milk was calculated with the inclusion of soybean cake and canola meal as well as the average dry matter intake in the diet when the nutritional breakdown of the experimental and control groups changed in a comparative aspect.

Keywords: soybean, canola flower, diet, fat, protein, NDF, ADC.

Introduction. Dairy productivity of dairy cows largely depends on provision with protein not decayed in rumen and formed by the microbial protein in the forestomachs and entered the bowel [1].

The provision with this protein at a sufficient level in accordance with the need for the productive capacity of cows is largely ensured by feeds with a high content of transit protein. The main protein feed is widely used in balancing the diet on protein of dairy cows in Kazakhstan is soybean in the form of a cake with the content of crude fat up to 10% and soybean meal up to 1.5%, protein - 35-40% or more. The generally accepted rate of adding soybean to the diet ranges from 100 to 150 grams per liter of products, while the highest fat content in milk without loss of volume is observed when using soybean meal. The only drawback of the use of soybean in balancing the diet of dairy cows according to protein is its relatively high cost, which greatly overestimates the prime cost of the final product since the main cost item in the diet accounts for protein feed.

In this regard, ways to reduce the diet cost without loss of dairy products, including fat and protein contents, are being sought. The main analogues are canola meal or press cake, which at the moment are much lower at market price, while the content of calcium, phosphorus, magnesium, and manganese exceeds soybean, and the optimal ratio of decayed and non-decayed protein ensures good development of rumen microflora.According to some scholars, the availability of calcium in canola is 68%, phosphorus - 75%, magnesium - 62%, manganese - 54%, copper - 74%, zinc - 44%. Canola also contains a significant amount of choline, niacin, riboflavin, folic acid and thiamine, and natural antioxidants like tocopherol, phenolic compounds, and tannins. In addition, it has good eating qualities providing excellent palatability when included in mono feeds[2].

Methods of research. Research work was carried out in a high producing herd of 132 animals, 3 groups of 44 heads each (1 experimental group and 2 control groups), milking was performed on a voluntary basis at the DeLaval robotic milking machine. Through the milking machine, the pelleted feed can be added through a feed unit at a rate of 100 grams per kg of milk up to 100 days of lactation, and 50 grams from 100 days or more of lactation each. The distribution of mono feed was conducted through a trailed horizontal feed mixer (DeLaval, 12 m^3volume) 2 times a day with an interval of 8 hours. Chemical

examination of forage and qualitative indicators of milk was determined in Bayserke Agro LLP laboratory.

Research results. The research work was conducted on the base of the dairy unit of Bayserke Agro LLP, the main experimental breed was Holstein of Canadian breeding. The average milk yield at the time of the experiment averaged from 38 to 41 liters, depending on the cows entering the machine, which varies from 2.9 to 3.2, the fat and protein mass fraction in milk is an average 3.4% and 3.1% respectively.

The aim of the research is to study the effect of canola meal on the dairy productivity of Holstein dairy cows and cost reduction of milk in the nutritional breakdown.

According to the results of a chemical examination of feed, the dry matter content in the diet of the control group averaged 23.5 kg per animal, digestible protein - 3520 g, exchange energy - 282 MJ, NEL - 162 MJ, the total crude fiber content in the diet is 16%. Similar indicators in the diet of the experimental group amounted to 24.7 kg of dry matter per animal, 3548 g of digestible protein, 279 MJ of exchange energy, 158 MJ of NEL and 15.8% of crude fiber. The structure of the experimental diet has been modified for 12 days according to the parameters of mono feed palatability (daily remainder on the feeding table not less than 5%) and the qualitative indicators of milk, such as fat and protein, taking into account the ratio of fat to protein with a coefficient of not less than 1.1. Due to identical indicators of crude protein content in soybeans and canola, which accounted for 38% each, at the beginning of the experiment, soybean cake was replaced by canola meal without changing the proportion of dietary ingredients, but due to a sharp decline in productivity in the experimental group up to 36 kg per animal, a clear recalculation of the diet was carried out with further modifications, which resulted in the approval of the above diet structure.

Table 1 - Diet structure of dairy cows of the control and experimental groups, productivity - 38-41 kg

Name of feed	Control group	Experimental group
Corn	2.2	3.3
Barley	4.6	4
Soybean cake	3.6	-
Canola meal	-	4.54
Pelleted combined feed (through the feed station)	2.2	2.2
IN-R 18 premix for dairy cattle	0.17	0.17
Tricalcium phosphate	0.2	0.2
Alfalfa haylage	8.4	5.8
Corn silage	24.4	27.4
Total	45.8	47.6

As a result of changes in the diet of the experimental group, the consumption of dry matter per animal increased by an average of 1.2 kg, from 23.5 to 24.7 kg, which is caused by a decrease in the content of neutral detergent fiber in the diet of the experimental group by 1.2%, from 25.6% to 24.4%. According to a number of researchers, a decrease in neutral detergent fiber in the diet leads to an enhancement in dry matter intake, but they also noted a reduction in the mass fraction of fat in milk [3]. It was found that the optimal case of the neutral detergent fiber content in the diets of dairy cows during the second phase of lactation is from 32.0 to 37.0% and the acid detergent fiber content is from 25.0 to 25.5% of the dry matter in the diet with productivity up to 25 kg, to ensure a high level of dairy production, the content of fat and protein mass fraction, and the best recovery of fatness after high milk yield[4].In this connection, the high-priority task is to increase the proportion of neutral detergent fiber in the diet to 26% in order to improve the qualitative indicators of milk, including fat content up to 3.6-3.7% and protein of not less than 3.2%. The solution to this problem is possible by adding beetroot pulp or soybean peel to the diet, the input rate of which, according to preliminary calculations, averages 1.2-1.4 kg per animal. The obtained data on the enhancing milk yield are not inferior to those in other farms of the Almaty region with Black-and-motley and Holstein black-and-white dairy cattle breeds [5, 6, 7].

As can be seen from Table 2, the average productivity of animals in the experimental and control groups was 40.8 and 40.3 kg per cow, respectively, but there was a decrease in fat and protein in the experimental group by 0.07% and 0.08%.

Table 2 - Indicators of dairy productivity of cows over the research period (90 days)

Indicators	Group	
	Experimental	Control
Total registered animals	44	88
Gross yield per animal, kg	2774.4±92.8	2741±68.9
Average per animal, kg	40.8±0.95	40.3±1.3
Fat mass fraction, %	3.36±0.9	3.43±0.7
Protein mass fraction, %	3.04±0.08	3.12±0.07
Prime cost in the diet structure, per 1 kg. tg.	58.2	73.1

Taking into consideration that milk sales are based on primary fat content (3.6%), the average productivity of the experimental group animals when transited to the basis was 38.08 kg and in the control group - 38.4 kg, but at the same time the prime cost of 1 kg of milk in the diet structure of the experimental group was lower by 20.4% than in the control one. As the state of the animals of the experimental group in relation to the control group, a difference is not marked.

Conclusions. In such a way, according to the research results, the possibility of preserving dairy productivity and enhancing profitability was shown using in the diet of dairy cows of canola meal as a protein feed. The average consumption of canola meal per 1 kg of products per diet averaged 110 grams, while the difference in the set of feed in the diets caused a change in the intake of dry matters between the groups.

Foundation for the research and source of funding. The program of target financing of the Ministry of Agriculture of the Republic of Kazakhstan for 2018 - 2020. URN: BR06249249-OT-18 Development of a comprehensive system to increase productivity and improve the breeding qualities of farm animals, as an example of Bayserke-Agro LLP.

ӘОЖ: 636.20./28.087

А.А. Спанов[1], Д.М. Бекенов[1], Д.Т. Султанбай[1], Г.К. Жаксылыкова[1], А.Д. Баймұқанов[2]

[1]“Байсерке-Агро” оқу ғылыми-өндірістік орталығы" ЖШС;
[2]Жоғары білім беру саласындағы федералдық мемлекеттік бюджеттік білім беру саласының мемлекеттік орталығы - К.А. Тимирязев атындағы Мәскеу аграрлық академиясы, Мәскеу қ., Ресей Федерациясы

"БАЙСЕРКЕ АГРО" ЖШС ГОЛШТИНСКИЙ ТҰҚЫМДЫ САУЫН СИЫРЛАРЫНЫҢ РАЦИОНЫНДА РАПС КҮНЖАРАСЫН ҚОЛДАНУ НӘТИЖЕЛЕРІ»

Аннотация. "Байсерке Агро"ЖШС жағдайында рапсты күнжараның сүт өнімділігіне және голштин тұқымды сауын сиырларының сүтінің сапалық көрсеткіштеріне әсері зерттелді. Соя күнжарасы мен рапс күнжарасын рационға қосқан кездегі сүттің өзіндік құны мен тәжірибелік және бақылау тобының рационының құрылымы өзгергенде құрғақ заттың орташа тұтынуы салыстырмалы аспектіде есептелген. Зерттеу жұмысының қорытындысы бойынша сүт өнімділігін сақтау және рентабельділікті жоғарылату мүмкіндігі рапс дәмін диетада сүт сиырларын ақуыздық жем ретінде пайдалану есебінен көрсетті. Орташа тұтыну рапс жүні 1 кг-ға азық-түлік өнімдері орта есеппен 110 грамм, ал рациондардағы азықтардың жиынтығындағы айырмашылық топтар арасында құрғақ заттардың өзгеруіне әкелді.

Түйін сөздер: соя, рапс, рацион, май, ақуыз, нейтральді-детергенттік клетчатка, қышқыл-детергенттік клетчатка.

УДК: 636.20./28.087

А.А. Спанов[1], Д.М. Бекенов[1], Д.Т. Султанбай[1],
Г. К. Жаксылыкова[1], А.Д. Баймуканов[2]

ТОО «Учебный научно-производственный центр Байсерке Агро»
[2]Российский государственный аграрный университет – Московская сельскохозяйственная академия им. К.А. Тимирязева, Москва, Россия

РЕЗУЛЬТАТЫ ПРИМЕНЕНИЯ РАПСОВОГО ШРОТА В РАЦИОНЕ ДОЙНЫХ КОРОВ ГОЛШТИНСКОЙ ПОРОДЫ ТОО «БАЙСЕРКЕ АГРО»

Аннотация. Изучено влияние рапсового шрота на молочную продуктивность и качественные показатели молока дойных коров голштинской породы в условиях ТОО «Байсерке Агро». Рассчитана себестоимость молока при включении в рацион соевого жмыха и рапсового шрота и среднее потребление сухого вещества при изменении структуры рациона опытной и контрольной группы в сравнительном аспекте.

Ключевые слова: соя, рапс, рацион, жир, белок, НДК, КДК.

Information about the authors:

Spanov Abzal Abushakipovich - Senior Researcher, ESPCBayserke-Agro LLP, Talgar District, Almaty Region, E-mail: abzal16@mail.ru, https://orcid.org/0000-0001-9303-3722;

Bekenov Dauren Maratovich - Master of Natural Sciences and Biotechnology, Director of ESPCBayserke-Agro LLP, Talgar District, Almaty Region, E-mail: unpcbayserke-agro@mail.ru, https://orcid.org/0000-0003-2244-0878;

Sultanbai Darina Tavaldievna - Senior Researcher,ESPC Bayserke-Agro LLP, Talgar District, Almaty Region, E-mail darinasultan@lenta.ru, https://orcid.org/0000-0001-9502-7481;

Zhaksylykova Gulnur Kenesbekovna - Senior Researcher,ESPC Bayserke-Agro LLP, Talgar District, Almaty Region, E-mail: gulnurzh@ro.ru, https://orcid.org/0000-0001-9020-5656;

Baimukanov Aidar Dastanbekouly - student of the Faculty of Zootechnics and Biology of the Russian State Agrarian University - Moscow Agricultural Academy named after K.A. Timiryazev, Moscow, Russian Federation. E-mail: aidartaidar98@mail.ru, https://orcid.org/0000-0001-9669-864X.

REFERENCES

[1] Fitsev A.I., Voronkova D.V. (1986) Current trends and rationing of protein for ruminants. Moscow. 54 p. (in Russ.).

[2] Pristach N.V., Pristach L.N. (2017) The use of canola meal in animal feeding. Youth and science. № 4. (in Russ.).

[3] Vorobyova S.V. (2003) Physiological rationale for the consumption of dry matter in cattle diets according to the content of structural carbohydrates in feed. The thesis of doctor biol. sciences. Specialty 03.00.13.Dubrovitsy. 252 p. RSL OD, 71:04-3/131.(in Russ.).

[4] SizovaYu.V. (2010) Effect of different levels of neutral detergent fiber in diet on nitrogen metabolism and dairy productivity of cows. Problems of biology of productive animals. Borovsk. №1. p. 61-67. (in Russ.).

[5] Semenov V.G., Baimukanov D.A., Kosyaev N.I., Alentayev A.S., Nikitin D.A., AubakirovKh.A. **(2019)** Activation of adaptogenesis and bioresource potential of calves under the conditions of traditional and adaptive technologies. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. Volume 1, Number 377 (2019), 175 – 189 https://doi.org/10.32014/2019.2518-1467.20 ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).

[6] Baimukanov D.A., Abugaliyev S.K., Seidaliyev N.B., Semenov V.G., Chindaliyev A.E., Dalibayev E.K., Zhamalov B.S., MukaSh.B. **(2019)** Productivity and estimated breeding value of the dairy cattle gene pool in the Republic of Kazakhstan. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. Volume 1, Number 377 (2019), 39 – 53 https://doi.org/10.32014/2019.2518-1467.5 ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).

[7] Alentayev A.S., Baimukanov D.A., Smailov S.D., Semenov V.G., Abdrakhmanov K.T., Begaliyeva D.A., Omarov M.M. (**2018**) Efficiency of breeding of the Alatau breed of brown cattle in the "Adal" agro-industrial company JSC. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. ISSN 1991-3494. Volume 5, Number 375 (2018), P.p. 12-29. https://doi.org/10.32014/2018.2518-1467.2

Publication Ethics and Publication Malpractice in the journals of the National Academy of Sciences of the Republic of Kazakhstan

For information on Ethics in publishing and Ethical guidelines for journal publication see http://www.elsevier.com/publishingethics and http://www.elsevier.com/journal-authors/ethics.

Submission of an article to the National Academy of Sciences of the Republic of Kazakhstan implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see http://www.elsevier.com/postingpolicy), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. In particular, translations into English of papers already published in another language are not accepted.

No other forms of scientific misconduct are allowed, such as plagiarism, falsification, fraudulent data, incorrect interpretation of other works, incorrect citations, etc. The National Academy of Sciences of the Republic of Kazakhstan follows the Code of Conduct of the Committee on Publication Ethics (COPE), and follows the COPE Flowcharts for Resolving Cases of Suspected Misconduct (http://publicationethics.org/files/u2/New_Code.pdf). To verify originality, your article may be checked by the originality detection service Cross Check http://www.elsevier.com/editors/plagdetect.

The authors are obliged to participate in peer review process and be ready to provide corrections, clarifications, retractions and apologies when needed. All authors of a paper should have significantly contributed to the research.

The reviewers should provide objective judgments and should point out relevant published works which are not yet cited. Reviewed articles should be treated confidentially. The reviewers will be chosen in such a way that there is no conflict of interests with respect to the research, the authors and/or the research funders.

The editors have complete responsibility and authority to reject or accept a paper, and they will only accept a paper when reasonably certain. They will preserve anonymity of reviewers and promote publication of corrections, clarifications, retractions and apologies when needed. The acceptance of a paper automatically implies the copyright transfer to the National Academy of sciences of the Republic of Kazakhstan.

The Editorial Board of the National Academy of sciences of the Republic of Kazakhstan will monitor and safeguard publishing ethics.

Правила оформления статьи для публикации в журнале смотреть на сайте:

www:nauka-nanrk.kz

ISSN 2518-1483 (Online), ISSN 2224-5227 (Print)

http://reports-science.kz/index.php/en/archive

Редакторы *М. С. Ахметова, Т.А. Апендиев, Д.С. Аленов*
Верстка на компьютере *А.М. Кульгинбаевой*

Подписано в печать 12.10.2019.
Формат 60x881/8. Бумага офсетная. Печать – ризограф.
п.л. Тираж 500. Заказ 5.