3. Henry B., Charmley E., Eckard R., Gaughan J. B., Hegarty R. Livestock production in a changing climate: adaptation and mitigation research in Australia. *Crop and Pasture Science*. 2012. 63 (3), 191-202. doi.org/10.1071/CP11169.

4. Eldridge D. J., Beecham G. The impact of climate variability on land use and livelihoods in Australia's rangelands. In book: Climate Variability Impacts on Land Use and Livelihoods in Drylands. First ed: Springer, Cham, 2018. P. 293-315.

5. Marai I. F. M., El-Darawany A. A., Fadiel A., Abdel-Hafez M. A. M. Physiological traits as affected by heat stress in sheep – A review. *Small Ruminant Research*. 2007. 71 (1-3), 1-12. doi.org/10.1016/j.smallrumres.2006.10.003.

6. Van Wettere W. H. E. J., Kind K. L., Gatford K. L., Swinbourne A. M., Leu S. T., Hayman P. T., Walker S. K. (2021). Review of the impact of heat stress on reproductive performance of sheep. *Journal of Animal Science and Biotechnology*. 2021. 12 (1), 26. doi.org/10.1186/s40104-020-00537-z.

7. Dixit S. P., Dhillon J. S., Singh G. Genetic and non-genetic parameter estimates for growth traits of Bharat Merino lambs. *Small Ruminant Research*. 2001. 42 (2), 101-104. doi.org/10.1016/S0921-4488(01)00231-0.

8. Yilmaz O., Denk H., Bayram D. Effects of lambing season, sex and birth type on growth performance in Norduz lambs. *Small Ruminant Research*. 2007. 68 (3), 336-339. doi.org /10.1016/j.smallrumres.2005.11.013.

THE INFLUENCE OF ISOLATION OF THE QUEEN BEE ON HER REPRODUCTIVE CAPACITY

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Introduction. The main task of beekeeping is to manage the factors that affect the productivity and viability of the bee colony in order to obtain the maximum output from the bees at minimal costs and at the same time not to disturb the biological condition of the colony. The reproductive activity of queen bees is essential for beekeeping. This is important for the preservation of the bee colony, as well as for the effective implementation of the economically useful characteristics of working honey bees. Therefore, the study of the reproductive activity of queen bees after isolation in modern changing natural and climatic conditions is of certain practical and scientific interest and is relevant today.

The goal of research: study of the reproductive function of isolated queen bees by accounting of brood during the spring-summer season.

Materials and methods of research. The study was carried out in the conditions of commodity honey production apiary in the Kyiv Oblast. In the course of the experiment, the efficiency of use of honey collection from black locust *Robinia pseudoacacia L.* by bees in the zone of their productive flight was determined. The bee colonies met the requirements of the standard of the Ukrainian steppe breed (*Apis mellifera sossimai*), which was confirmed by the results of the exterior evaluation [1, 2].

The bee colonies of the experimental groups were cared for in the same way, according to generally accepted methods [3]. Bee colonies were kept in vertical storied hives on 8 standard frames (frame size 435x300mm) with extensions for the frame 435x145 cm.

Four groups of bee colonies were formed with three colonies in each group: control and 3 experimental. *Group I of bee colonies*: 10 days before the start of honey collection from black locust the queen bees were isolated in queen excluders. At the end of the nectar flow, the queen bees were released. *Group II*: 5 days before the start of honey collection, queen bees were isolated in queen excluders, released from excluders after the end of honey collection from black locust. *Group III*: with the beginning of honey collection from black locust, queen bees were isolated, released after the end of honey collection from black locust.

The reproductive capacity of queen bees before and after isolation was determined by the area of caped brood. Accounting for the number of brood was determined using a grid frame, which was divided into cells measuring 5x5 cm.

Statistical processing of the obtained digital data was carried out using the MS Excel program. Student's t-test was used to compare the researched indicators and their intergroup differences. The results of average values were considered statistically likely at $p<0,05$.

The results of research. According to the results of accounting, as of June 14, in the experimental group I there was almost no brood, 0,5±0,264 quadrants (table), however bee colonies had a large number of worker bees for rearing brood. The bee colonies of the II-and III experimental groups had approximately the same number of brood – 104,6667±15,52 and 108,6667±6,928 quadrants.

1. Dynamics of rearing brood before and after the isolation of queen bees, quadrants, n=24

date	control	I experimental group	II experimental group	III experimental group
7.05	152,6667±22,208	157±21,168	158±22,272	165,6667±24,592
19.05	180±20,256	187,3333±18,768	191±15,72	181,6667±15,072
14.06	201,6667±13,848	0,5±0,264*	104,6667±15,52*	108,6667±6,928*
26.06	200±16,704	14,83333±5,34*	18±5,424*	49,33333±10,56*
08.07	228,6667±11,984	177,6667±16,104*	208,6667±6,304	205,3333±11,008
20.07.	188,3333±11,232	205,3333±10,624	182,3333±10,312	185,6667±9,848
1.08	132,6667±13,216	139,6667±8,944	150,3333±6,472	141±9,024
13.08	101,1667±14,748	105±12,504	94,66667±15,232	97,66667±13,88
25.08	45,33333±8,064	50±12,096	51,66667±9,608	48±11,328
6.09	82,33333±14,304	72±11,136	84,66667±16,4	89±13,704

It was identified that the queen bees of experimental groups were characterized by low egg-laying capacity after the isolation. As can be seen from the data in the table, as of June 26, the isolated queen bees from experimental groups started laying eggs immediately after their release from queen excluders, as evidenced by the presence of brood. Starting from July 8 and until the end of the beekeeping season, there were almost no significant differences between queen bees released

from isolation and queen bees from the control group of colonies in terms of reproductive activity. In some periods, the difference on the dates of accounting between the groups averaged from 10 to 15 quadrants of brood.

Conclusions. By comparing queen bees of the control group of colonies and queen bees that were isolated for different periods, namely, from 10 to 20 days, it was established that isolation did not affect the physiological changes in their reproductive system, and, subsequently, the strength of bee colonies when they entered the period of hypobiosis. This gives reason to believe that it is possible to successfully use the technological method of isolating queen bees for a period of up to 20 days. At the same time, we plan to continue research on the reproductive activity of isolated queen bees, as there is a need to study their productivity with age.

REFERENCES

1. Polishchuk V. P., Holovetskyi I. I., Metlytska O. I., Skrypnyk V. V. Metodychni rekomendatsii z otsiniuvannia chystoporodnosti bdzhil ta stvorennia vnutrishnoporodnoho typu [Methodological recommendations for evaluating the pure breeding of bees and creating an intrabreed type]. Kyiv: Aston, 2009 [in Ukrainian].

2. Ibatullin I. I., Panasenko Yu. O., Kononenko V. K. Praktykum z hodivli silsko-hospodarskykh tvaryn [Workshop on feeding farm animals]. Kyiv: Vyshcha osvita, 2003 [in Ukrainian].

3. Brovarskyi V., Brindza Ya., Otchenashko V. Doslidna sprava u bdzhilnytstvi [Research work in beekeeping]. Kyiv: Redaktsiino-vydavnychyi viddil NUBiP Ukrainy, 2020 [in Ukrainian].

ВІДТВОРЮВАЛЬНІ ЯКОСТІ ТА РІВЕНЬ ЇХ ФЕНОТИПНОЇ КОНСОЛІДАЦІЇ У СВИНОМАТОК ВЕЛИКОЇ БІЛОЇ ПОРОДИ ФРАНЦУЗЬКОЇ СЕЛЕКЦІЇ РІЗНИХ ТИПІВ АДАПТАЦІЇ

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Вступ. Метою ввезення в Україну свиней зарубіжної селекції є прискорення селекційного процесу, збільшення валового виробництва свинини і рівня рентабельності галузі свинарства. Проте, як свідчить досвід спеціалістів агроформувань і результати науково-дослідної роботи вчених [1–6] реалізація зазначеного не завжди є успішною. А тому,