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INITIAL OBSERVATIONS ON PREVENTIVE MEASURES IN HERDS OF DAIRY COWS OF CONSERVED AND HIGHLY PRODUCTIVE BREEDS

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Abstract. Cattle of conserved breeds are more resistant, healthier, and more adaptable to unfavourable environmental conditions, with less rigid feed requirements. In contrast, cattle of highly productive breeds are more sensitive to deviations in environmental conditions and therefore are assumed to require a wider range of preventive actions. The aim of the study was to present the differences and similarities in the use of preventive measures in herds of cattle of conserved and high-yielding breeds. The data for the study were collected by means of an Internet survey. A total of 150 responses from dairy cattle farmers were obtained, from four producer groups. Statistical analysis of the results was performed by the chi-squared test. It was concluded from the responses that farmers raising high-yielding breeds more often make use of prophylactic tools such as regular veterinary and zootechnical checks, microclimate measurements, TMR and PMR feeding systems, balancing of feed rations, feed quality testing (especially haylage and maize silage), and use value assessment. However, high-yielding cows had access to pasture much less often than cattle of breeds included in a genetic resources conservation programme. Breeding progress is important in the development of a breeding farm, and therefore farmers should be aware of the value of genetic and cytogenetic testing as additional tools broadening the range of preventive measures that could improve the genetic pool in the dairy cattle population in Poland.

Key words: prevention, dairy cattle, conserved breeds, high-yielding breeds.

INTRODUCTION

Native breeds make up only a small percentage of dairy cattle raised in Poland. They are included among indigenous populations that increase biodiversity. They are covered by a genetic resources conservation programme (http://bydlo.bioroznorodnosc.izoo.krakow.pl). Their productivity is low, but is compensated for by excellent adaptability to unfavourable environmental conditions. They are distinguished by low nutritional requirements, very good feed conversion, resistance to disease, longevity, high fertility, ease of calving, and beneficial milk composition (Trela et al. 2015; Majewska 2019). However, due to their much lower milk production compared to high-yielding breeds such as Holstein-Friesians, they are rarely chosen for dairy farming. In 2021 the genetic resources conservation programme included 3533 head of Polish Red-and-

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White cattle, 2377 head of Polish Red cattle, 1305 head of Polish Black-and-White cattle, and 639 head of White-Backed cattle (http://bydlo.bioroznorodnosc.izoo.krakow.pl/liczebnosc). This is a small percentage (0.12%) of the total farmed cattle population in Poland (about 6,400,904 head) (https://pfhb.pl/rynek-mleka/poglowie). Given the numerous assets of these animals, especially their health, this is a very small share in Polish herds. A very important criterion for the dairy farmer is profitability. Raising high-yielding dairy cattle is known to be more profitable on industrial farms (Krupiński et al. 2018). In these breeds, intensive breeding work and selection for increased productivity has led to an increase in milk yield at the expense of functional traits and reproductive performance (Litwińczuk et al. 2012; Chabuz et al. 2013; Nowak et al. 2018). It is worth asking whether animals that are potentially more resistant and less demanding in terms of conditions might compensate for their lower milk production through lower labour input and costs associated with preventive measures.

Prophylaxis is an extremely important issue in high-yielding dairy cattle farming. A wide range of preventive measures make it possible to maintain the animals' well-being and prevent health problems and diseases that could affect productivity, reproduction, and the profitability of cattle farming (Zenker 2021). Cows with very high milk yield are particularly sensitive to any changes in their environment, and it is these animals that are most often susceptible to diseases of the reproductive system and infertility (Jaśkowski et al. 2006; Preś and Mordak 2010; Pawlina et al. 2015; Nowak et al. 2018). Disorders of various types and the diseases resulting from them often have a wide range of causes, and for this reason preventive measures must encompass various aspects of the animal's life – housing, diet, the microclimate in the barn, and veterinary and zootechnical procedures. It should be borne in mind that every veterinary intervention or newly introduced preventive measure entails costs and affects the profitability of dairy farming (Zenker 2021).

The aim of the study is to present the differences and similarities in the use of preventive measures in herds of cattle of conserved and high-yielding breeds.

MATERIAL AND METHODS

The data for the study were collected using an anonymous online survey conducted in November 2021 using Google Forms. A total of 150 responses were obtained from dairy cattle farmers, from four producer groups identified on their Facebook pages as 'Cattle farmers', 'Dairy cows – dairy cattle producers', 'Dairy cattle' and 'Cattle without secrets'. The form was constructed in accordance with applicable guidelines for collecting data by means of a questionnaire (Zagańczyk 2014). The questionnaire consisted of 18 single-select multiple-choice questions.

Information was collected on the following: basic herd size (A – 10–20, B – 20–50, C – 50–100, D – over 100); type of herd – high-yielding (R1) or covered by a genetic resources conservation programme (R2); farmers' level of education; use of use value assessment; housing system (E – tie-stall without litter, F – tie-stall with litter, G – free-stall without litter, H – free-stall with litter); access to pasture; use of preventive measures – veterinary and zootechnical checks; artificial insemination; measurements of the relative humidity [%] and temperature [°C] of the indoor air; environmental enrichment in barns (elements that prevent boredom – toys and behavioural anomalies, as well as items for coat care – brushes); feeding system (I – TMR, J – PMR, K – traditional); balancing of feed rations (L – not balanced, M – balanced with the assistance of a consultant, N – balanced independently); consultation with nutritional advisers; feed quality testing; diagnostic tests (biochemical blood tests, content of micro- and macroelements in the blood, cytogenetic testing, karyotype testing); and interest in broadening the use of prophylactic measures.

Statistical analysis of the results was carried out using Statistica 12.5 MR1 PL software. The relationships between parameters were analysed using the chi-squared test with the Yates correction at a significance level of 0.05.

RESULTS AND DISCUSSION

According to the respondents, at least 10 head of dairy cattle were kept on all surveyed farms. High-yielding breeds were kept on 133 of these farms and conserved breeds on 17. Among high-yielding herds, those numbering from 50 to 100 animals or more than 100 animals accounted for the highest percentage (35.5% and 29.5%, respectively). Most herds covered by the genetic resources conservation programme numbered 10–20 and 20–50 (41% each). The chi-squared test showed a statistically significant relationship between the type of herd and differences in herd size (χ^2 = 16.6; p = 0.00) (Table 1). According to Wilczyński (2012) and Komorowska (2019), a large percentage of dairy cow farms raise herds of average size generating low profits. Production costs decrease as herd size increases; farms with more than 300 head of cattle report the highest incomes. Besides herd size, the cows' level of milk yield is a very important factor (Skarżyńska 2012). Nevertheless, Ziętara et al. (2013) emphasize that cows in smaller herds have a longer productive life, which positively affects the profitability of milk production. Szumiec and Musiał (2021) note that smaller farms, in contrast to industrial farms with large numbers of animals, pose a smaller environmental threat. The housing system significantly influences the welfare, productivity, and health of dairy cattle (Radkowska 2016; Borusiewicz et al. 2019). The results of the survey showed that tie-stall housing with litter (47%) and free-stall housing with litter (31%) are preferred for high-yielding herds, while cows in herds covered by genetic resources conservation are mainly kept in a tie-stall system with litter (82%). This is a statistically significant relationship (χ^2 = 8.4; p = 0.04) (Table 1). Although other researchers also report that this type of housing is common, the highly beneficial effects of a free-stall system with litter are emphasized (Borusiewicz et al. 2019). According to Kuczaj et al. (2013), cows kept in free stalls produced milk with better quality parameters than those kept in tie-stall barns. The advantages of free-stall housing with litter include freedom of movement, the opportunity for natural behaviours, and the possibility of observing anomalies in the locomotor system, which is clearly associated with higher levels of animal welfare (Solan and Józwik 2009; Borusiewicz et al. 2019).

Another important issue is access to pasture (Table 1). According to the survey data, the relationship between the type of herd and access to pasture was statistically significant. Cattle in high-yielding herds had the opportunity to use a pasture much less often (29%) than cattle covered by genetic resources conservation (59%). At the same time, the respondents report that cows kept in a pasture + indoor system spent time in the pasture mainly in the summer (May to September), on average 8 hours a day. Grazing paddocks are an extremely valuable prophylactic measure with beneficial effects on the locomotor system, physiological processes, health, well-being (natural behaviours), haematological and hormonal parameters, and milk quality (Hernandez-Mendo et al. 2007; Radkowska 2012; Mroczek 2013; Radkowska et al. 2018).

The respondents also answered a question regarding education in animal husbandry or veterinary medicine. Most cattle farmers had no higher education. Among owners of high-production herds, 55% of respondents lacked this level of education, while the corresponding figure for owners of conserved breeds was as high as 76.5% (Table 1). Borecka (2010) also showed a low percentage of individuals with higher education among dairy cattle farmers. Our study showed no significant relationship between the type of herd and education in animal husbandry or veterinary medicine (χ^2 = 2.9; p = 0.09). According to Szumiec and Musiał (2021), the quality

characteristics of labour resources, such as the age and education of farm owners, are important for the development of farms.

Use value assessment is carried out by the Polish Federation of Cattle Breeders and Dairy Farmers (PFCBDF). It is used to record reproductive performance, functional and conformation traits, and parameters describing the quantity and quality of the milk obtained (Gaworski and Wójcik 2013). Therefore it can provide a great deal of information on the well-being and health condition of cattle and on the effectiveness of prophylactic measures (Klebaniuk et al. 2016; Guliński and Kłopotowska 2019). The results of our survey showed that farmers keeping herds of high-yielding cattle more often make use of use value assessments (R1 – 71%) than those keeping cattle of conserved breeds (R2 – 23.5%). A significant relationship was shown between the type of herd and the use of use value assessments (χ^2 = 15.4; p = 0.00) (Table 1). The milk of conserved breeds is considered to be rich in functional components and highly suitable for cheese-making (Zapletal et al. 2018; Majewska 2019), and therefore should also be subject to quality assessment. Its less frequent use in conserved breeds may be due to the small scale of production, which is not as profitable as milk production on an industrial scale. Nevertheless, it would be worthwhile for farmers raising cattle covered by genetic resources conservation to take part in use value assessment, which can be helpful in developing the health-promoting properties of milk and the reproductive traits of these breeds.

Artificial insemination not only plays a very important role in successful impregnation, which is necessary for the start of each lactation, but is also a tool that makes it possible to obtain and distribute the semen of the best bulls and to accelerate genetic improvement (Diskin 2018). The vast majority of farmers around the world prefer artificial insemination of cows and heifers as an element of herd management (Sahin et al. 2022). The information obtained in our survey also confirmed the high level of use of artificial insemination in both high-yielding herds (98%) and those included in the genetic resources conservation programme (88%). A relationship was shown between the type of herd and the use of artificial insemination (χ^2 = 4.2; p = 0.04) (Table 1).

Table 1. Characteristics of surveyed farms

Factor		Herd R1		Herd R2				χ^2
		empirical value	expected value	empirical value	expected value	empirical value	expected value	
Herd size	A	15.0	19.5	11.0	7.0	2.5	41.0	16.6*
	B	32.0	34.6	24.0	7.0	4.4	41.0	
	C	47.0	43.4	35.5	2.0	5.6	12.0	
	D	39.0	35.5	29.5	1.0	4.5	6.0	
Housing system	A	7.0	7.1	5.0	1.0	0.9	6.0	8.4*
	B	62.0	67.4	47.0	14.0	8.6	82.0	
	C	23.0	21.3	17.0	1.0	2.7	8.6	
	D	41.0	37.2	31.0	1.0	4.8	2.7	
Pasture	yes	39.0	43.4	71.0	10.0	5.6	59.0	6.0*
	no	94.0	89.6	29.0	7.0	11.4	41.0	
Education	yes	60.0	56.7	45.0	4.0	7.3	23.5	2.9
	no	73.0	76.3	55.0	13.0	9.7	76.5	
Use value assessment	yes	95.0	87.8	71.0	4.0	11.2	23.5	15.4*
	no	38.0	45.2	29.0	13.0	5.8	76.5	
Artificial insemination	yes	130.0	128.6	98.0	15.0	16.4	88.0	4.2*
	no	3.0	4.4	2.0	2.0	0.6	12.0	

* Significant with p < 0.05.

Herd size: A – 10–20, B – 20–50, C – 50–100, D – over 100; housing system: A – tie-stall without litter, B – tie-stall with litter, C – free-stall without litter, D – free-stall with litter.

The survey included a question about the need for regular veterinary and zootechnical care. Owners of high-yielding herds reported the need for regular care (86.5%), while a much smaller percentage of (53%) owners of herds covered by the genetic resources conservation programme were interested in such care. A relationship was shown between the type of herd and the need for regular veterinary and zootechnical care (χ^2 = 11.8; p = 0.00) (Table 2). The lower frequency of use of artificial insemination in conserved breeds may be due to the good health condition of cattle of these breeds, which has been discussed by numerous researchers (Trela et al. 2015; Krupiński et al. 2018; Majewska 2019).

Another parameter included in the survey was measurements of humidity and temperature, which are a fundamental element of prevention. The microclimate influences the health, well-being, and longevity of animals and thus also their productivity. Unsuitable microclimatic conditions can lead to heat stress in animals (Lutnicki et al. 2021). The most common consequences are reduced reproductive performance (including a lower conception rate, hidden oestrus, and higher embryo mortality) and decreased milk yield, resulting in higher production costs (Angrecka and Herbut 2012; Herbut et al. 2018; Davison et al. 2020; Żychlińska-Buczek and Skrzyński 2021). On the farms surveyed, a statistically significant relationship was shown between the type of herd and measurements of the microclimate in the barn (χ^2 = 8.4; p = 0.00). Humidity and temperature measurements are carried out in the barns of 49% of high-yielding herds and 12% of barns with cows covered by genetic resources conservation (Table 2). The small percentage in protected herds may be linked to the high resistance of conserved breeds to environmental conditions, whereas for sensitive high-yielding cows microclimate control is recommended as a permanent element of prophylaxis. A very interesting aspect of cattle farming is the introduction of 'enrichment', which positively affects behaviour. These are elements that prevent boredom (toys) and thereby prevent behavioural anomalies that can initiate disease or reduce animal welfare, as well as items for coat care (brushes), which influence the animals' productivity. However, enrichment is mainly used in free-stall barns, where the animals can use them at will. The small percentage of farmers providing cows with enrichment in our study may be due to their preference for the tie-stall system. The survey results showed that enrichment is used in only 40% of barns with high-yielding breeds and 12% of barns with conserved breeds (Table 2). A statistically significant relationship was shown between the use of enrichment in the two types of barns on the farms surveyed (χ^2 = 5.1; p = 0.02).

Table 2. Basic preventive measures and desire to expand prophylaxis

Factor		Herd R1		Herd R2				χ^2
		empirical value	expected value	empirical value	expected value	empirical value	expected value	
Veterinary/ zootechnical checks	yes	115.0	110.0	86.5	9.0	14.1	53.0	11.8*
	no	18.0	23.1	13.5	8.0	3.0	47.0	
Humidity and temperature measurement	yes	65.0	59.4	49.0	2.0	7.6	12.0	8.4*
	no	68.0	73.6	51.0	15.0	9.4	88.0	
Enrichment	yes	53.0	48.8	40.0	2.0	6.2	12.0	5.1*
	no	80.0	84.2	60.0	15.0	10.8	88.0	
Desire to expand prophylaxis	yes	105.0	103.7	79.0	12.0	13.3	71.0	0.6
	no	28.0	29.3	21.0	5.0	3.7	29.0	

* Significant with p < 0.05.

The appearance of TMR and PMR feeding systems was associated with the increased prevalence of high-yielding breeds, which are sensitive to nutritional deficiencies and thus re-

quire a properly balanced diet allowing their genetic potential to be exploited (Bąkowski et al. 2013; Salado et al. 2020). Conserved breeds are less demanding in terms of nutrition (Majewska 2019), which is probably why the predominance of more advanced feeding systems – PMR (16.5%) and TMR (49%) – relative to traditional feeding is observed in high-yielding herds. A statistically significant relationship was shown between the type of herd and the preferred feeding system ($\chi^2 = 8.5$; $p = 0.01$). Farmers raising high-yielding breeds are also more likely to consult nutritional advisers (71%) and to feed cows a diet balanced with the help of a consultant (58%) or independently (38%). High-yielding cows, especially in the peripartum period, are susceptible to oxidative stress. It may be caused primarily by a poorly balanced diet, especially in terms of vitamins and minerals (Jóźwik et al. 2012). For this reason farms with high-yielding breeds in particular should use feed balancing services, preferably offered by a specialist. In herds of conserved breeds the traditional feeding system is predominant (70%), the services of nutritional consultants are not used (88%), and the diet is balanced independently (82%). Statistically significant relationships were shown between the type of herd and balancing of the feed ration ($\chi^2 = 13.0$; $p = 0.00$) and between the type of herd and the use of a nutritional consultant ($\chi^2 = 22.7$; $p = 0.00$) (Table 3). A very important nutritional factor is feed quality. According to the respondents, maize silage and haylage are the most common feeds. The nutritional value of silage depends on a number of factors, such as the means of storage, date of harvest, type of cultivation and drying, and mowing height (Kowalik and Michalski 2009; Gach and Korpysz 2011; Podkówka 2019). The quality of silage significantly affects animals' productivity and health, which means that testing of silage quality is a prophylactic measure. Our survey showed a significant relationship between the type of herd and the use of feed quality testing ($\chi^2 = 19.3$; $p = 0.00$). On farms with high-yielding breeds 71% of farmers take advantage of this service, compared to only 18% of farmers raising conserved breeds. This may be due to the desire of farmers raising high-yielding cows to obtain the highest possible yield and maintain the animals' health.

Table 3. Dietary prophylaxis in dairy cattle

Factor		Herd R1		Herd R2				χ^2
		empirical value	expected value	empirical value	expected value	empirical value	expected value	
Feeding system	A	22.0	20.9	16.5	2.0	3.1	12.0	8.5*
	B	65.0	59.1	49.0	3.0	8.9	18.0	
	C	46.0	53.0	34.5	15.0	8.0	70.0	
Balanced diet	A	5.0	5.3	4.0	1.0	0.7	6.0	13.0*
	B	77.0	70.1	58.0	2.0	9.0	12.0	
	C	51.0	57.6	38.0	14.0	7.4	82.0	
Nutritional consultant	yes	94.0	85.1	71.0	2.0	10.9	12.0	22.7*
	no	39.0	47.9	29.0	15.0	6.1	88.0	
Feed quality testing	yes	95.0	86.9	71.0	3.0	11.1	18.0	19.3*
	no	38.0	46.1	29.0	14.0	5.9	82.0	

* Significant with $p < 0.05$.
Feeding system: A – TMR, B – PMR, C – traditional; balanced diet: A – not balanced, B – balanced with the assistance of a consultant, C – balanced independently.

In the case of breeds protected by genetic resources conservation, fluctuations in yield are less pronounced, and the animals are less demanding about the choice of feed and utilize it better (Trela et al. 2015; Majewska 2019). Nevertheless, as conserved breeds are valued for

the beneficial functional composition of their milk, which can be affected by poor-quality silage components, quality testing should be recommended in these herds as well.

Another means of prophylaxis and monitoring of animal health is diagnostic testing. Biochemical blood testing is an important element of monitoring of overall health and homeostasis (Radkowska 2015), and therefore it is a common tool used by farmers raising both high-yielding (65%) and conserved breeds (71%). However, there was no significant relationship between the type of herd and the use of biochemical tests ($\chi^2 = 0.2$; $p = 0.67$) (Table 4). Blood testing for mineral content is a more advanced element of diagnostics. It reveals deficiencies of individual micro- and macroelements which should be corrected in the diet. Unfortunately, most of these tests are costly, which most likely explains why they are rarely used in herds of high-yielding (R1 – 33%) and conserved breeds (R2 – 29%). No relationship was shown between the type of herd and the use of blood tests for the content of micro- and macroelements ($\chi^2 = 0.1$; $p = 0.76$) (Table 4). However, due to the high susceptibility of high-yielding cattle breeds to oxidative stress (Jóźwik et al. 2012), this would be a useful tool helping to balance the feed ration.

The Holstein-Friesian breed is the most common in high-yielding herds. A disadvantage of this breed is the high degree of inbreeding, which contributes to the appearance of genetic defects and anomalies which can be passed on to subsequent generations (Kamiński 2015). This breed is often used for crossbreeding in order to improve milk yield in dairy cattle all over the world (Trukhachev et al. 2017). Genetic disorders can negatively affect animals' reproductive performance, health condition, and productivity, which generates costs (Kamiński 2015). For this reason, a crucial aspect of breeding is the selection of pairs for mating. Cytogenetic testing and karyotyping are tools in genetic diagnostics which can significantly accelerate genetic advancement and reduce losses in herds (Trukhachev et al. 2017; Dzitsiuk and Tipilo 2019). Since 1989 cytogenetic testing of bulls has been conducted as a compulsory element of assessment of suitability for breeding (Ciechańska and Kruszyński 2011). Unfortunately, the survey respondents do not use cytogenetic testing in either high-yielding (85%) or conserved herds (94%). No relationship was noted between the type of herd and the use of cytogenetic testing ($\chi^2 = 1.6$; $p = 0.31$) (Table 4). Karyotype testing is not carried out in most high-yielding cattle herds (R1 – 83%). In the case of the remaining percentage, it is most often cows and heifers that are tested. Karyotype testing is also not usually carried out in herds protected by genetic resources conservation (R2 – 88%). Our study showed no relationship between the type of herd and the use of karyotype testing of animals used for breeding ($\chi^2 = 0.3$; $p = 0.57$) (Table 4). Karyotype analysis makes it possible to identify individuals with genetic defects, especially in the case of disorders and diseases which affect physiological parameters, particularly fertility and reproduction (Iannuzzi 2007). An abnormal karyotype often results in reduced reproductive performance, i.e. a decline in or complete loss of the capacity to form functional gametes, or – when conception takes place – in embryonic death (Nino-Soto and King 2004; Khatun et al. 2011). Early elimination of individuals with mutations from the herd is crucial for the entire population, as these are often hereditary anomalies, and therefore their negative effect on reproductive performance can cause economic losses in livestock farming for many years (Basrur and Stranzinger 2008; Dzitsiuk and Tipilo 2019). Identification of individuals with mutations and chromosomal instabilities makes it possible to cull them from the herd. Numerical instabilities in sex chromosomes lead to disorders in the development of reproductive organs. This type of infertility is rarely manifested in the animal's phenotype. It is not detected until the animals reach sexual maturity, together with fertility disorders and reproductive problems. This results in economic losses in the form of costs for rearing and attempts at breeding (Iannuzzi 2007). Abnormalities in the segregation of meiotic chromosomes can lead to the appearance of unbalanced gametes, and subsequently to embryonic and foetal mortality. Abortion results in repeated, delayed oestrus, which prolongs the calving interval and thus generates further economic losses for the farmer (Iannuzzi 2007).

Studies by Słota et al. (2000), Danielak-Czech and Słota (2002), and Danielak-Czech and Słota (2004) have discussed the phenomenon of structural chromosome instability in livestock animals as the cause of frequent clinical pathologies or reproductive disorders. For this reason, in both conserved and high-yielding herds, investment in genetic testing would have long-term positive results by establishing high levels of immunity and favourable production traits in animals.

Table 4. Diagnostic tests of peripheral blood for prophylaxis in dairy cows

Factor		Herd R1		Herd R2				χ^2
		empirical value	expected value	empirical value	expected value	empirical value	expected value	
Biochemical testing	yes	87.0	87.8	65.0	12.0	11.2	71.0	0.2
	no	46.0	45.2	35.0	5.0	5.8	29.0	
Tests for micro- and macroelements	yes	44.0	43.5	33.0	5.0	5.6	71.0	0.1
	no	89.0	89.6	67.0	12.0	11.5	29.0	
Cytogenetic testing	yes	20.0	18.6	15.0	1.0	2.4	6.0	1.6
	no	113.0	114.4	85.0	16.0	14.6	94.0	
Karyotype testing	yes	23.0	22.2	17.0	2.0	2.8	12.0	0.3
	no	110.0	110.8	83.0	15.0	14.2	88.0	

* Significant with $p < 0.05$.

Many farmers have not made use of highly advanced and modern prophylactic tools. However, in their responses to the question about the desire to broaden their use of prophylactic tools, farmers with both high-yielding (R1 – 79%) and conserved breeds (R2 –71%) often indicated such intentions. No relationship was shown between the type of herd and the desire to expand the use of prophylactic measures in their herds ($\chi^2 = 0.6$; $p = 0.43$) (Table 1). However, this creates a space for popularizing existing possibilities of prevention and creating new ones.

CONCLUSION

Prophylactic measures are an essential element of livestock farming in both high-yielding and conserved herds. Cattle of high-yielding breeds are more sensitive to environmental factors. It was concluded from the results of the survey that:

1. Farmers raising high-yielding cattle more often make use of preventive measures such as veterinary and zootechnical checks, humidity and temperature measurements, advanced feeding systems (TMR or PMR), balancing of feed rations (independently or with the help of a nutritional consultant), feed quality testing (especially of haylage and maize silage), and use value assessment.
2. However, high-yielding cattle are far less likely to have access to pasture, which is considered an element of prevention, especially of lameness.
3. Cattle of conserved breeds are considered to be more resistant and less demanding, but they too require certain procedures to enhance their exceptional traits, such as the functional composition of their milk, which can be compromised by low-quality or poorly balanced feed. Use value assessment would also be useful for monitoring milk quality.
4. Genetic advancement is crucial in both types of herds, and therefore farmers should be made aware of the advantages of cytogenetic and karyotype testing, which could help to improve the gene pool in the cattle population.

5. The desire among farmers to broaden the range of preventive measures is very promising, as it creates a space for popularizing tools that improve the health status and welfare of dairy cattle and contribute to genetic advancement.

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WSTĘPNE OBSERWACJE NAD DZIAŁANIAMI PROFILAKTYCZNYMI W STADACH KRÓW MLECZNYCH RAS ZACHOWAWCZYCH I WYSOKO PRODUKCYJNYCH

Streszczenie. Bydło ras zachowawczych charakteryzuje się większą odpornością, zdrowotnością i możliwościami adaptacyjnymi do niekorzystnych warunków środowiskowych oraz mniejszymi wymaganiami w doborze paszy. Natomiast bydło ras wysokoprodukcyjnych jest bardziej wrażliwe na wszelkie odstępstwa w warunkach środowiskowych, z tego powodu zakłada się, że wymaga większego spektrum działań profilaktycznych. Celem niniejszej pracy było przedstawienie różnic i podobieństw w stosowaniu środków profilaktycznych w stadach bydła ras zachowawczych oraz wysokowydajnych. Dane do pracy zostały zebrane za pomocą ankiety internetowej. Uzyskano 150 odpowiedzi od hodowców bydła mlecznego z czterech grup producenckich z różnych części kraju. Następnie wyniki opracowano statystycznie za pomocą testu chi kwadrat. Na podstawie otrzymanych odpowiedzi wnioskowano, że hodowcy ras wysokomlecznych częściej korzystają z narzędzi profilaktycznych takich jak stała kontrola weterynaryjno-zootechniczna, pomiary wilgotności i temperatury, systemów żywienia TMR i PMR, bilansowania dawki, badania jakości pasz (szczególnie sianokiszonki i kiszonki z kukurydzy) oraz oceny wartości użytkowej. Jednak zdecydowanie rzadziej bydło wysokowydajne ma dostęp do pastwiska w odróżnieniu od bydła ras objętych programem ochrony zasobów genetycznych. Przy rozwoju gospodarstwa hodowlanego ważny jest postęp hodowlany, dlatego istotnym aspektem dla hodowców jest uzmysłowienie im zalet korzystania z badań genetycznych, cytogenetycznych jako dodatkowych narzędzi poszerzających spektrum profilaktyki, które mogłyby przyczynić się do udoskonalania puli genowej w populacji bydła mlecznego w Polsce.

Słowa kluczowe: profilaktyka, bydło mleczne, rasy zachowawcze, rasy wysokowydajne.