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Data on the Dominant Pathologies in Bovine Dairy Farms in the Wilaya of Skikda, Northeastern Algeria

Research Article

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Abstract

In dairy cattle farms, pathologies are responsible for serious economic damage, leading not only to mortalities and a drop in production of the dairy herd, but also to additional veterinary costs while increasing the workload for breeders. The objective of this work is to determine the nature and frequency of the dominant pathologies in 157 dairy cattle farms monitored over four years (2016, 2017, 2021, 2022). Mastitis, anestrus and lameness were the most frequently observed pathologies during the surveys. They were followed by abortions, non-delivery and metritis which all appear as multifactorial pathologies. Clinical mastitis represented 31.5% of the cases observed in the farms surveyed with a high prevalence rate (7.7±10.9% on average). Anestrus was also frequent (15.6% of pathological cases of reproduction observed) with a prevalence rate of 5.6±15.2%. Lameness was the third pathological disorder by frequency, after infertility and mastitis. Concerning repeat breeding, it represents 7.2% of the pathological cases observed, with a prevalence rate of 1.9%.

The other pathologies are observed at lower prevalence rates (theileriosis 1.4%, piroplasmosis 1. 0%). Metritis has the lowest prevalence rate (0.7%). In the case of calves on the farms surveyed, diarrhea is the most frequent pathology (93.8% of cases) and is most often fatal the multifactorial nature of these pathologies testifies to the unfavorable conditions in terms of housing, food, breeding and milking hygiene on the farms surveyed.

Keywords: Cattle dairy farm; Dominant pathologies; prevalence, Algeria

Introduction

In dairy cattle farms, pathologies are responsible for serious economic damage, leading not only to mortalities and a drop in production of the dairy herd, but also to additional veterinary costs while increasing the workload for breeders. Mastitis and lameness are the dominant pathologies in dairy cattle farming in France (Fourichon, et al. [1,2]). In Algeria, multifactorial pathologies are common in dairy cattle farming. The risk factors for these conditions are as numerous as they are complex (Mammeri et al, [3]). The department of Skikda has significant dairy cattle production potential, estimated at 136,100 heads of cattle in 2017, including 82,000 dairy cows for an annual milk production of 126,076,000 liters. However, this breeding is not exempt from sanitary constraints. The objective of our work is to determine the nature and prevalence of the dominant pathologies in 157 dairy cattle farms monitored over four years (2016, 2017 and 2021, 2022).

Materials and Methods

Skikda is a coastal wilaya (or department) in the northeast of Algeria, located some 490 km from Algiers (the capital).It is an agro-sylvo-pastoral wilaya and cattle breeding is predominant there. In order to determine the dominant pathologies in dairy cattle breeding in this wilaya, surveys were carried out during two agricultural campaigns, an agricultural campaign is the period during which a normal growing cycle takes place. This cycle is between the start of sowing and harvesting for annual crops. (2016-2017 and 2021-2022) .The surveys were carried out on the basis of a questionnaire and interviews with

the various actors of the milk sector in the study region: producers (heads of farms, employees, family members involved in dairy cattle breeding activities), as well as on the basis of direct observations of pathologies of cows. The farms constituting the study sample were identified and monitored using survey sheets in order to be able to collect zootechnical and health information from the farmers concerned. The 157 farms surveyed are distributed in 22 municipalities of the wilaya of Skikda and together hold a workforce of 1324 dairy cows (Figure 1).

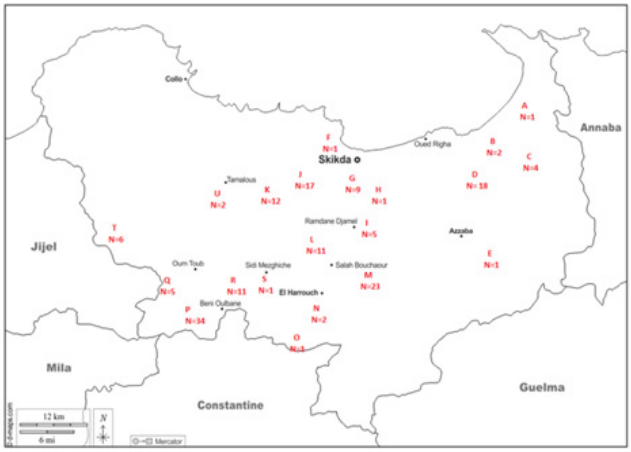

Figure 1: Map of the distribution of farms surveyed (n=157) in the wilaya of Skikda

(A: Name of the locality, N: Number of farms)

(A : Ben Azzouz ; B : Djendel ; C : Ain Cherchar ; D : Azzaba ; E : Essebt ; F :Skikda ; G : Hamadi Krouma ; H : Beni Bchir ; I : Ramdane Djamel ; J : El Hadaik ; K : Bouchtata ; L : Emdjezedchiche ; M : Salah Bouchaour ; N : El Harrouch ; O : Ain Bouziane ; P : Beni Oulbene ; Q : OumToub ; R : Ain Bouziane ; S : Sidi mezghiche ; T : Ain Kechra ; U : Tamalous ; V : Bin elOuidene.).

The sample of farms was randomly selected from among the farms of 22 municipalities in the wilaya of Skikda. In total, the herd of the farms monitored consisted of 1324 dairy cows whose breed composition was dominated by the pure Holstein breed (51.1%). The rest was divided between other purebreds, including the Friesian Pie noir (34.7%), the Montbéliarde (10.0%), the Fleckvieh, the Normande, and the Brune des Alpes (2.2%), and the local and mixed breeds (2.0%). The prevalence of diseases within the dairy cattle herds surveyed was measured by calculating (for each disease observed) the proportion of sick cows present in all the dairy cattle farms surveyed. This prevalence (P) is defined by P=M/N (where M=Number of sick cows and N = total number of sick and non-sick cows in the population considered). A prevalence rate (x100) is deduced from this.

Results and Discussions

Results of Pathologies Observed in Dairy Cows

In dairy cows (n=1324), we recorded 321 pathological cases. In addition, other pathologies linked to reproduction (anoestrus, infertility) have also been diagnosed in them. The pathologies observed in dairy cows are of four types (Table 1)

Metabolic and Digestive Pathologies: Milk fever is the metabolic pathology observed in 1.2% of farms surveyed. As for digestive pathologies (diarrhoea, bloating and indigestion) they are observed in 5.7% of the cases observed.

Reproductive Pathologies: Apparent conditions directly affecting the reproductive system of cows (anestrus, infertility, metritis, retained placentas and abortions) were observed in 35.5% of the farms surveyed. Anestrus represents the dominant reproductive pathology in the farms surveyed (i.e. 15.6% of cases observed). Other pathologies such as infertility, abortions, retained placenta and metritis represent respectively 7.2%, 6.2%, 3.7% and 2.5% of observed cases.

Table 1: Pathologies in dairy cows on surveyed farms.

Pathologies observed	Number of cases	Frequencies (%)
Digestive and metabolic pathologies		
Diarrhea of dairy cows	8	2,5
Hypocal-caemia	4	1,2
Bloat	5	1,6
Indigestion	5	1,6
Reproductive pathologies		
Anœstrus	50	15,6
Repeat breed-ing	23	7,2
Abortion	20	6,2
No delivery	12	3,7
Metritis	8	2,5
Crushed pelvic nerves	1	0,3
Infectious diseases		
Clinical mas-titis	101	31,5
Bronchopneu-monia	2	0,6
Brucellosis	5	1,6
Tuberculosis	2	0,6
Keratoconjonc-tivitis	1	0,3
Parasitic pathologies		
Theiléria	16	5,0
Piroplasmosis	6	1,9
Disorder of the muscoloskeletal system		
Lameness in dairy cows	49	15,3
Sacroiliac dis-location	3	0,9
Total	321	100,0

Pathologies of the Musculoskeletal System: Lameness is the most common pathology of the musculoskeletal system (15.3%), however, sacroiliac dislocation was observed in 3 surveyed farms, this pathology represents 0.8% of pathological cases observed (Figure 2).

Infectious and Parasitic Pathologies: Mastitis is at the head of the pathological cases observed in the farms surveyed (31.5% of the cases), respiratory diseases represent 0.6% of the cases observed, while tuberculosis and brucellosis are noted respectively in 2 cases (i.e. 0.6%) and 5 cases (i.e. 1.6%). As for the parasitic pathologies linked to grazing (theileriosis and piroplasmosis), they represent respectively 5.0% and 1.9% of the pathological cases observed in the farms surveyed (Figure 3).

Prevalence of the Dominant Pathologies in the Farms Surveyed

Concerning the prevalence of pathologies, mastitis is the 1st dom-

inant pathology in the farms surveyed with a prevalence rate of 7.7 ± 10.9%. As for anestrus, it follows with a prevalence rate of 5.6 ± 15.2%. The affection of the foot (lameness) is the 3rd pathology with a prevalence rate of 3.0 ± 6.4%. The other pathologies are observed at lower rates (Repeat-breeding = 1.9%, Theileriosis =1.4% and piroplasmosis =1.0%). Metritis recorded the lowest rate (0.7%) (Table 2). Mastitis, anestrus and lameness were at the top of the pathologies observed during the surveys. They are followed by abortions, non-delivery and metritis which all appear as multifactorial pathologies. These observations are in agreement with those made in France by (Faye, et al. [4]) who indicate that these pathologies reflect errors in the management of the herd and shortcomings in terms of habitat and environment. Clinical mastitis represents 31.5% of the cases observed in the farms surveyed with a high prevalence rate (7.7±10.9% on average).

Figure 2: Pathologies of the musculoskeletal system, observed in surveyed farms.

Figure 3: Cases of clinical mastitis.

We join (Bouaziz [5]) in saying that mastitis remains one of the dominant pathologies that plague dairy cattle farms both in terms of their frequency and the losses they cause. Several factors predispose to udder infection, indeed the results of (Bouazziz, et al. [6]) show the intervention, in the appearance of mastitis, of five main bacteria, namely Staphylococcus aureus, Escherichia coli, Streptococcus agalactiae, Streptococcus uberis and coagulase negative staphylococci. As for anestrus, it is frequent (15.6% of pathological cases of reproduction observed) with a prevalence rate of 5.6±15.2%. The resumption of postpartum (activity depends on various factors (Souames, et al. [7]).It has been shown there that a prolonged energy deficit can affect follicular development, corpus luteum development and also oocyte quality in cows (Gagnon [8]), whereas at the start of lactation, it can be the cause of a delay in recovery of ovarian activity and then low fertility (Enjalbert [9]).

Table 2: Prevalence rates of pathologies in surveyed farms.

Pathologies	Mean ± Standard Deviation	Minimum	Maximum
Mastitis	7,7±10,9	0,0	50,0
Anestrus	5,6±15,2	0,0	100,0
Lameness	3,0±6,4	0,0	33,3
Repeat-breeding	1,9±6,5	0,0	33,3
Theileriosis	1,4±6,8	0,0	57,1
Abortion	1,2±4,3	0,0	25,0
Non-delivery	1,1±4,7	0,0	33,3
Piroplasmosis	1,0±5,6	0,0	50,0
Metritis	0,7±3,2	0,0	20,0

With a prevalence rate of 3.0 ± 6.4%, lameness comes third in the hierarchy of pathological disorders, after fertility and mastitis as reported by (Faye, et al. [10,11]). Regarding repeat breeding, it represents 7.2% of pathological cases observed, with a prevalence rate of 1.9±6.5%. This agrees with the observations of (Meyer, et al. [12]) who report that their main causes are endometritis, inseminations at the wrong time and anomalies in rationing or food transition. Also Rock (2006) reports that the cause of low fertility in dairy cows is multifactorial. Metritis represents only 2.5% of observed cases. (Kaidi [13]) pointed out that this is an inflammatory disease that occurs in the postpartum period and results from bacterial superinfections. The appearance of endometritis is conditioned by the more or less active state of the defense mechanisms of the uterus (Hanzen [14]). Factors linked to poor dietary behavior are also responsible for digestive pathologies (diarrhoea, bloating and indigestion as reported by (Wolter [15]).

Conclusion

A work on the dominant pathologies in bovine dairy farms was conducted in the wilaya of Skikda in northeastern Algeria and monitored in 157 dairy cattle farms distributed in 22 municipalities over four years (2016, 2017 and 2021, 2022). The surveyed hold a workforce of 1324 dairy cows. The Results of pathologies observed in dairy cows shows a prevalence of four types of pathologies represented by the reproductive pathologies (aneustrus, repeat breading,abortions, no delivery,metritis, crushed pelvic nerves); infectious diseases (clinical mastitis,bronchopneuponia, brecellosis, tuberculosis,keratoconjonctivitis); parasitic pathologies (theileriosis, piroplasmosis); disorders of musculoskeletal system (lameness, sacroiliac dislocation). Mastitis, anestrus and lameness were the most predominant pathologies and the most observed and they are followed by cases of abortion, non-delivery and metritis. Their multifactorial nature testifies to the unfavorable conditions in terms of housing, feeding, reproductive management and milking hygiene of dairy cows.

References

1. Fourichon C (1991) Rev sci tech Off int Epiz 10(1):151-164.
2. Faye B, Landais E, Coulon JB, Lescourret F (1994) INRA Prod Anim 7(3): 191-206.
3. Mammeri A, Kayoueche FZ, Benmakhlouf A (2021) Dominant pathol-

ogies in dairy cattle farming in the region of Constantine, 3rdRuminant Research Meetings 2p.

4. Faye B, Barnouin J (1996) Ecopathology or how to approach multifactorial pathology. INRA Prod Anim127-134.
5. Bouaziz O (2005) Contribution to the study of intramammary infections of dairy cows in eastern Algeria. Doctoral thesis in veterinary sciences. Mentouri University of Constantine pp.296.
6. Bouaziz O, Aimeur R, Kabouia R, Bererhi EH (2002) Prevalence of different germs responsible for clinical mastitis in cows in eastern Algeria. Science and Technology Special-D 27-32.
7. Souames S, Kaidi R, Khelef D (2007) the impact of body condition and energy balance on postpartum ovarian activity in dairy cows. Days of Veterinary Sciences National Veterinary School of Algiers 21-22.
8. Gagnon A (2012) the effect of a combined supplement of folic acid and vitamin B12 on the dominant ovarian follicle in the postpartum dairy cow. PostDoctoral Thesis .Laval University as part of the master's program in animal sciences for obtaining the degree of Master of Science (M.Sc.). Quebec.
9. Enjalbert F (2007) Relationship between feeding and reproduction in cows dairy. 5th Days of Veterinary Sciences, National Veterinary School of Algiers 21-22.
10. Faye B, Barnouine J (1988) Lameness in dairy cows summary of the results of the continuous ecopathological survey INRA laboratory of ecopathology 63122 Ceyrat.
11. Delacroix M (2000) Diseases of Cattle Third Edition. Editions France Agricole. Paris 312-341 and 346-35.
12. Meyer C, Denis JP, (1999) Breeding of dairy cows in the tropics, Montpellier, Cirad Collection Techniques pp. 314.
13. Kaidi R (1989) the uterine involution in the cow. Thesis Doctorat. Vet School nLangford Birstol UK.
14. Hanzen C (2003) Ruminant pathologies. Faculty of Veterinary Medicine. Liège Belgium.
15. Wolter R (1994) Feeding the dairy cow. Agricultural France. Paris pp. 209.