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Collection of data by non-professionals in ecopathology surveys

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Summary — In the course of the surveys carried out by the Centre d'Écopathologie Animale, the collection of data is performed by interviewers who are specialists in cattle breeding (*eg*, technicians, veterinary surgeons, and inseminators). This practice improves the reliability of the collected data but gives rise to constraints. To get round these difficulties, a number of methods improving the feasability of surveys by numerous and various interviewers have been developed and adapted: setting up surveys by interdisciplinary groups; preliminary surveys and validation of survey procedures and aids; and training interviewers about the ecopathological approach and the constraints of data collection.

epidemiology / survey / data collection

Résumé — Le recueil des données par des enquêteurs non professionnels dans les enquêtes d'écopathologie. *Dans les enquêtes réalisées par le Centre d'écopathologie animale, le recueil des données est assuré par des enquêteurs qui sont les intervenants habituels de l'élevage : techniciens, vétérinaires, inséminateurs, pédicures bovins, etc. Cette pratique améliore la fiabilité des données recueillies, mais introduit des contraintes. Pour remédier à ces difficultés, des méthodes permettant d'accroître la faisabilité des enquêtes par des enquêteurs nombreux et divers ont été développées et adaptées : conception des enquêtes en groupe de travail pluridisciplinaire et pluriprofessionnel, pré-enquête et validation des documents et protocoles, formation des enquêteurs à l'approche écopathologique et aux contraintes du recueil des données.*

épidémiologie / enquête / recueil des données

INTRODUCTION

Data collection in ecopathology surveys is a complex process because the collected data refer to all elements of animal breeding *(ie* animals, farm buildings, feeding). These elements are numerous and can be obtained in different ways: clinical examination of animals; measurement of breeding parameters; analysis of documents relative to breeding; and interviews of farmers.

The collected data should be of as high a quality as possible in terms of data comparability between surveyed farms and of non-response rate (the rate of non-response per question being all the more penalizing in multivariate statistical analysis). Another objective is to minimize the rate of drop out of both farmers and interviewers not only because of the cost involved, but also because it might jeopardize the entire work.

* Correspondence and reprints

In the course of the 14 surveys that it has carried out to date or is carrying out at present, the Centre d'Écopathologie Animale has always used interviewers who are professionally involved in breeding (technicians, veterinary surgeons, inseminators, bovine chiropodists and farmers) and who are not specialists in data collection by education or because of their professional activity.

This decision was taken as part of the political orientation underlying the creation of the Centre d'Écopathologie Animale "... ecopathology as a tool of agricultural development is considered as an activity within the reach of anyone, and is practiced and revitalized by those who participate in it (conception, realization, and survey analysis) and by the people for whom it is destined" (Rosner, 1984). Besides their activity as interviewers, these specialists in cattle breeding take part in the work of the Centre d'Écopathologie Animale at all levels, from choosing the survey subjects to interpreting their results. In a task group, which they form and which is led by a task operator responsible for the study, they are continuously trained owing to the constant exchange of ideas and experience that takes place there. This method of work allows members of the group to fully understand their task.

This paper presents both the advantages and the constraints of the choice of this type of interviewer to the survey conception and implementation as well as the methods developed to find a solution for these constraints.

ADVANTAGES OF THE CHOICE OF INTERVIEWER

Besides the political reasons mentioned in the introduction, breeding specialists are chosen as interviewers for technical reasons linked to the poor formalization of the information to be collected.

Indeed, the data to be collected can be grouped according to 3 levels. At the 1st level, the information is not formalized at all. To obtain the information, it is necessary to observe the animals (characterization of the disease, body condition scoring, cleanliness scoring, and morphology of the mammary glands), the breeding conditions (atmospheric and surroundings parameters, size of building) and to interview the farmer (breeding practice, events to be dated retrospectively).

At the 2nd level, information concerning the breeding parameters is formalized, but not in conformity with the standards of the survey. This is the case for the reproduction data registered in lambing notebooks and reproduction schedules. After being critically reviewed, the information has to be retranscribed in the survey documents. Sometimes it might also be necessary to find out certain details from the breeder.

At the 3rd level, the information is formalized in a standardized way for all the surveyed farms. This is the case for the milk control data and the growth control data. Access to this information is quite easy and can sometimes be automated (transfer of relevant computerized data).

The information to be collected during ecopathology survey falls mostly within the 1st level and to a lesser degree within the 2nd; the data of the 3rd level are exceptional. This implies that the interviewers must have a technical knowledge of the breeding process to accomplish certain technical operations (see 1st level above) and to analyze and control the coherence of the data of levels 1 and 2.

Moreover, the interviewers must have privileged relationships with the farmers due to previous professional connections, which make a survey possible (the farmer agrees to give up some of his time) and allow confidential data to be obtained (for example, amount of the farmer's debt).

The type of interviewer used by the Centre d'Écopathologie Animale satisfies both conditions. Furthermore, this is a good choice from a financial point of view, because it is much simpler and more economical to train people professionally involved in breeding to carry out surveys rather than to teach 'professional' interviewers all the agronomic, zootechnical, veterinary and economic knowledge necessary to collect data in ecopathology surveys. Finally, if the professional interests of the interviewers are directly linked to the subject of the survey, their involvement and motivation for its successful realization become much stronger (Rumeau-Rouquette *et al,* 1988).

CONSTRAINTS DUE TO THE CHOICE OF INTERVIEWER

Constraints linked to the quality of the interviewers

First of all, the educational level of the interviewers is very heterogeneous: from the secondary school level to the postgraduate level. Furthermore, they were trained in various fields such as veterinary science, agronomy and agriculture. Therefore, depending on the interviewer, the knowledge of certain subjects could be insufficient (*eg,* pathology for breeding technicians or zootechnics for veterinary surgeons) and consequently their comprehension of what should be observed during surveys could be different. In certain cases, this might make the farmer doubt whether the interviewer has a right to carry out the survey and thus question its credibility in general.

Furthermore, the interviewers rarely master the constraints of data collection. As a result, some elements of the survey protocol might not be respected, such as dates of visits, animals to be observed (for example, it is much easier to take blood samples from animals of the same lot rather than from randomly chosen animals of a herd), and methods of observation–notation (which might lead to a lack of precision and consequently loss of information, or to excessive precision and consequently a waste of time).

Constraints linked to the work of the interviewers

The Centre d'Écopathologie Animale has no institutional links with its interviewers and it can therefore neither force them to participate in a survey, nor make them bring it to completion. The agreement that defines relationship between the Centre d'Écopathologie Animale and the interviewers is nevertheless a formal link that binds the 2 parties but does not have the same force as an institutional or hierarchical link. Thus the interviewers commit themselves and carry out surveys only if they are convinced of the interest of this work at their level and in general.

The interviewers carry out the ecopathology survey in addition to their everyday professional activity; this represents an additional and secondary work for them and there is a risk that, although remunerated, it might be neglected.

One of the consequences is that, on average, every interviewer carries out few surveys (for example, 1–7 surveys for the study of suckling ewe mastitis, with an average of 2.8), which means that the person in charge of the survey has to deal with many interviewers who are not quite familiar with all its elements. However, the failure of one of the interviewers to continue his work has limited consequences on the total number of surveys carried out.

Relational constraints

The previous professional relationships between the interviewers and the farmers

can also be a source of problems in conducting surveys. In fact, the farmers agree to participate in the ecopathology surveys owing partly to a relationship of trust with the interviewers and thus, in some cases, they are not fully aware of all the constraints and the entire work involved in a survey.

The result might be that the farmer gives up the survey or conducts it unsatisfactorily, or that the farmer's work has to be done by the interviewer who will have to make additional visits not foreseen in the protocol.

METHODS DEVELOPED TO REMEDY THE CONSTRAINTS

Conception of a survey by a task group

The task group is one of the pivots in the functioning of the Centre d'Écopathologie Animale. A task group is set up for each survey. It is pluridisciplinary (epidemiology, economics, zootechnics) and pluriprofessional (farmers, breeding technicians, veterinary surgeons). It is implicated in all stages of a survey: from the conception to the formalization of the Écopatho-transfert Programme which popularizes the results of the survey.

During the conception stage, the pluridisciplinary and the pluriprofessional nature of the task group is, like in other fields, the "obligatory state of the organization of the research" (Legay, 1992) due to complex and essentially multifactorial problems of breeding diseases. The function of a task group at this stage is to search, identify, validate and formalize the hypotheses of the risk factors of the studied syndrome or disease and to define the survey protocol. Thanks to the technical knowledge of all its members, and the knowledge of the constraints of the sector, the task group guarantees the feasibility of the survey. Moreover, the majority of the task group members will carry out the surveys themselves. While working at the survey conception, they already see themselves in the role of interviewers and give more thought to the feasibility of the project.

Another function of the task group at the conception stage is the interactive training of its members at all work meetings by sharing each other's technical knowledge under the leadership of the person in charge of the study.

Preliminary survey

The preliminary survey is the part of the survey that allows the validation of all the elements guaranteeing the feasibility of the survey (Ganière *et al*, 1991). The preliminary survey consists of perfecting tools and methods of measurement and notation, validating projects of protocol and questionnaires worked out by the task group and in optimizing the data collection media.

Perfecting tools and methods of measurement and notation means creation of practical measuring tools (*eg*, a device to measure the circumference of the goat carpus and metacarpus in order to characterize the clinical form of carpal arthritis), tools for semiquantitative notation of cleanliness in cows (Faye and Barnouin, 1985) and indicators for atmospheric conditions (adaptation of atmospheric indicators for sheep houses using a smoke apparatus developed by the Institut de l'Elevage).

The projects of the protocol and questionnaires are validated during a real survey conducted in a small number of farms. The validation is done either by fully applying the survey protocol for a short period of time (for example, for the survey 'Pathology costs in dairy cattle farms', the full validation of the protocol was carried out in 12 farms during 6 weeks), or by the complete realization

of certain parts of the protocol (*eg,* observation and palpation of 60 ewes as described in the protocol for the nursing ewe mastitis survey). These validations allow a test of the feasibility of the data collection as it was conceived, *eg,* exhaustive choice of foreseeable answers for all questions (Rumeau-Rouquette *et al,* 1988), univocal wording of the questions. Another main objective of this validation is to make sure that the time foreseen for the survey visits is not underestimated.

The final function of the preliminary survey in terms of data collection is to optimize the data collection media. The ergonomics of the documents should be well thought over. The documents are structured chronologically depending on how the visits are organized. The necessary explanations are given simultaneously with all planned questions and acts, as well as with the elements of answer coding (Rumeau-Rouquette *et al,* 1988). A one-page list of measurements, questionnaires and necessary material is provided for each visit.

The survey documents are well presented and legible: questions and comments are printed in different character types and the code boxes for computerized data processing are always in the right column. Finally, interviewers are provided with all the material necessary for the survey, such as notice boards to be installed in buildings for livestock, material to identify the animals, special pencils for humid conditions, insulated boxes and cooling elements for the shipment of samples.

Training of interviewers

While members of the task group represent the nucleus of the team of interviewers and carry out proportionally more surveys per person, other interviewers are also called upon who have not participated in the conception of the survey. For example, in the nursing ewe mastitis survey, 11 members of the task group conducted 40 surveys, while 20 other interviewers carried out 47. The heterogeneity stemming from the degree of involvement of the interviewers and from their knowledge of the survey adds up to the structural heterogeneity of the interviewers, which is compensated to a certain extent, for some of them, by the interactive training and participation in the task group. To make up for this heterogeneity, training sessions are organized during the setting-up period in order to bring all the interviewers to the same level of comprehension of the survey. During these sessions, which usually last 1 or 2 d, the objectives and constraints of the study are presented, then the protocol and the questionnaires are studied, attentively and in detail, and the sessions are closed by a pratical training in the use of specific techniques (taking biological samples, examination of animals). The sessions are organized for groups of 10–20 interviewers. One of the main objectives of the sessions is to give the team of interviewers a common and well-defined aim in order for each of them to feel responsible for his field of work with regard to the team.

Follow-up during the survey

The surveys conducted by the Centre d'Écopathologie Animale are usually carried out in each farm during a period of 3–36 months, depending on the subject. At this stage, contact with the interviewers is maintained in different ways. If the nature of the survey allows it, the survey documents are grouped into units to be returned to the Centre d'Écopathologie Animale as the survey advances. This allows the time between recording an observation and controlling it to be reduced and, if necessary, a quick revisit to the source of information. When surveys are conducted over a long period of time, information is regularly returned to both the

farmers and the interviewers while the survey is under way. The returned information can contain interpreted results of serological and bacteriological analyses or results of statistical analyses performed on the first documents of the survey. The information is exchanged with the aim of developing a relational network between the Centre d'Écopathologie Animale and the farmers and interviewers and maintaining their motivation to bring the survey to its completion.

CONCLUSION

Data collection in ecopathology surveys should allow to provide the best approach to 3 objectives: a high level of data quality for all surveys; a high level of data comparability; and a minimum number of participants giving up their work while the survey is in progress. The choice to call upon specialists in cattle breeding to collect data has certain advantages but also adds constraints.

The methods developed to remedy these constraints have the following objectives: (i) to involve the interviewers at all stages of the survey so that they consider the importance of matter, the ecopathology and the object and the ecopathology survey; (ii) to facilitate the work of interviewers by validating all the elements necessary for its successful completion during the preliminary survey and by paying special attention to the ergonomics of the documents and materials used during the survey; (iii) to teach to the interviewers the ecopathological approach to breeding diseases as well as the constraints in data collection during the surveys; and (iv) to develop communication procedures between the Centre d'Écopathologie Animale, the interviewers and the farmers by creating and maintaining a network for each survey.

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