The construction and evaluation of a questionnaire to identify quantitative criteria for evaluating national Veterinary Services

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Summary
This article presents the first part of a large-scale study aimed at developing a method for collecting standard information, based on quantitative criteria, about the national Veterinary Services of Member Countries of the OIE (World organisation for animal health). This information can then be used to assess such Veterinary Services in terms of quality and performance, or for accreditation. The study identified objective and relevant criteria for characterising Veterinary Services and an extensive questionnaire was developed, covering all aspects of the structures and functions of national Veterinary Services, which was sent to a broad range of OIE Member Countries. Each question and its answers were then evaluated and validated. In this way, 49 questions suitable for obtaining quantitative criteria to describe Veterinary Services were identified. In the next step of the study, this complex set of data will be further analysed.

Keywords
Assessment – Quantitative evaluation – Questionnaire – Validation – Veterinary Service.

Introduction
As a result of the rules and regulations issued by the World Trade Organization (WTO) on sanitary and phytosanitary measures (the 'SPS Agreement') (22), risk analysis has become increasingly important in the international trade in animals and animal products. Such risk analyses should be conducted in a non-discriminatory way and based on objective and scientific criteria. Assessment of the quality of national Veterinary Services is important in this context, because they are the competent authority for certifying animal health status in the exporting country. The OIE (World organisation for animal health) is responsible for setting standards for risk analysis in the international trade of animals and animal products.

In 1993, the OIE introduced the concept of 'Evaluation of the Veterinary Services' as an integral part of import risk analysis in its International Animal Health Code (the Code) (14). In the same year, the 'Guidelines for the evaluation of Veterinary Services' were presented to Member Countries, together with a detailed questionnaire (10). At the 70th General Session of the OIE in 2002, a new version of these guidelines was adopted (12) and integrated into the eleventh edition of the Code (14). This protocol, based on a qualitative approach, allows for the complete audit of a Veterinary Service but is difficult to use, as the Code does not specify how the obtained data should be integrated into an import risk analysis.

The Code (14) also contains fundamental principles of quality with which Veterinary Services should comply. Subsequently, some authors have proposed the application of internationally accepted quality assurance standards, such as the International Organization for Standardization (ISO) 9000 series for Veterinary Services (6, 9). Since the latter approach focuses on the activities and services (the 'output'), rather than on the structure and organisation of a Veterinary Service, it has the advantage that Veterinary Services can be organised and function in different ways, according to the specific needs and capabilities of the country concerned. On the other hand, the implementation of such internationally accepted quality assurance standards is a complex, costly and time-consuming...
matter (16), and therefore difficult to achieve, especially in countries with few financial resources.

A quantitative method for incorporating the evaluation of Veterinary Services into animal health risk assessments has also been proposed (1, 17). In this approach, information is gathered through a self-administered questionnaire which covers the following elements:
- human resources
- material resources
- legislative support
- actions in animal and public health
- the general functioning of Veterinary Services.

The responses are then assessed, according to a guideline which attributes scores to each question. The sum of all scores leads to a global score between 0 and 100 for the evaluated Veterinary Service, with a score of 100 reflecting the ‘perfect’ Veterinary Service. The choice of the evaluation criteria, their weighting and the attribution of the scores are nevertheless somewhat arbitrary (16, 17).

To assist in making decisions on the international trade of animals and animal products which can be accepted by all parties, the authors propose a similar approach, but one which is based on a validated set of quantitative criteria. The long-term aim of this study is to verify the following hypothesis: quantitative criteria for the evaluation of national Veterinary Services can be obtained and used for quality and performance classification, or for their accreditation.

In this paper, the authors present the construction and evaluation of an extensive questionnaire as the first step in the development of a tool to identify and collect quantitative criteria for the evaluation and assessment of national Veterinary Services.

Materials and methods
The construction of the questionnaire
The complete questionnaire and accompanying instructions are available upon request from the first author.

Initially, the authors used information found in the literature and previous studies and surveys, as well as existing questionnaires on similar subjects (1, 3, 10, 11). In addition, a list of potential tasks of national Veterinary Services was established, and these tasks were described. A set of conditions (e.g. resources) was then proposed which would be needed to complete each task. For example, a sufficient number of veterinarians or other staff are required in the field to collect samples for the monitoring of specific diseases. Finally, these conditions were transformed into a total of 78 questions, covering a broad range of topics, and included in the questionnaire. The questions were structured in 17 sections (Table I).

Table I
The seventeen sections of the questionnaire constructed by the authors to identify quantitative criteria for evaluating national Veterinary Services

<table>
<thead>
<tr>
<th>Section</th>
<th>Number of questions (n = 78)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Objectives of the National Veterinary Service and general information</td>
</tr>
<tr>
<td>2</td>
<td>Political will</td>
</tr>
<tr>
<td>3</td>
<td>International trade</td>
</tr>
<tr>
<td>4</td>
<td>Functional organisation</td>
</tr>
<tr>
<td>5</td>
<td>Human resources</td>
</tr>
<tr>
<td>6</td>
<td>Financial resources</td>
</tr>
<tr>
<td>7</td>
<td>Legislative support</td>
</tr>
<tr>
<td>8</td>
<td>Communication</td>
</tr>
<tr>
<td>9</td>
<td>Transport systems</td>
</tr>
<tr>
<td>10</td>
<td>Disease status</td>
</tr>
<tr>
<td>11</td>
<td>Monitoring and surveillance</td>
</tr>
<tr>
<td>12</td>
<td>Diagnostic capabilities</td>
</tr>
<tr>
<td>13</td>
<td>Emergency plans</td>
</tr>
<tr>
<td>14</td>
<td>Public health</td>
</tr>
<tr>
<td>15</td>
<td>Research</td>
</tr>
<tr>
<td>16</td>
<td>Quality control systems</td>
</tr>
<tr>
<td>17</td>
<td>Animal welfare</td>
</tr>
</tbody>
</table>

a) Participating countries were asked about both the primary objectives and characteristics of their Veterinary Services and for more specific figures describing their country (e.g. geographical area, number and types of domestic animals/livestock, types of ranching/animal husbandry systems and the contribution of animal production to the gross domestic product).
b) In these sections, the scope of the work, the structure and the resources of the National Veterinary Services were explored (e.g. the number of sub-national units, the chain of command, the number of staff, the total number of veterinarians in the country, and other resources).
c) These four sections covered the animal health status of the participating countries, the national epidemiological, monitoring and surveillance systems, and the national policies on diseases identified in the OIE lists of A and B diseases.

d) These four sections covered the animal health status of the participating countries, the national epidemiological, monitoring and surveillance systems, and the national policies on diseases identified in the OIE lists of A and B diseases.

A substantial emphasis was placed on the design of the questionnaire, since a clear questionnaire has been proven to increase the response rate and validity of the answers (18, 19). The questionnaire was given a professional and pleasant appearance, and the general layout was carefully planned. In addition, to shorten the time span for obtaining the data and increase the response rate, an electronic version of the questionnaire was developed for e-mail submissions.

Instructions were included with the questionnaire to explain the general purpose of the study and the design and the structure of the questionnaire, as well as general tips on how to fill it in. Further simple instructions were added directly to the questionnaire, and the definitions of particular terms were explained at the beginning of some chapters and questions (Fig. 1).
One problem was the choice of language. Since the questionnaire would be sent to many different countries, it needed to be understood unambiguously by all respondents. English was chosen as the main language for this survey, since it is a common language in the scientific world and used in international organisations such as the OIE. Moreover, to enhance the response rate of some countries, and to avoid bias due to poorly understood questions, all correspondence and the instructions of the questionnaire were translated into the two additional official languages of the OIE: French and Spanish. Time constraints restricted the translation of the actual questionnaire into French only. However, Spanish-speaking countries were given the choice of completing either the English or French version of the questionnaire.

Finally, a group of experts was asked to review the questionnaire before it was sent to the Member Countries and to assess the relevance and practicability of the questions. Among the assessors were people with experience in veterinary epidemiology, the functioning and structure of Veterinary Services and other specific areas addressed in the questionnaire.

Self-evaluation

In the first section of the questionnaire, two questions asked countries to evaluate their own Veterinary Service on a scale from one (poor) to five (excellent). One of those questions asked for an estimation of the overall quality of the Veterinary Service in terms of reaching and fulfilling its objectives. The second question asked for an indication of how the respondent thought their primary international trading partners would rank their Veterinary Service. The answers to these questions would inevitably not be objective. The intention of the authors was, nevertheless, to explore if these assessments could be used for scoring purposes. Thus, this self-assessment or self-classification by the respondent was compared with other answers throughout the questionnaire, and may serve as one possible approach when establishing classification rules.

Countries participating in the survey

The method used for determining a study sample influences the ability to generalise the findings to the target population (18). For example, tropical regions have disease patterns and agricultural production conditions which are very different from those of regions with moderate climates. Also, the difficult economic situation in some countries may be blamed for a lack of effectiveness in their Veterinary Services, especially in developing countries (7). To ensure that this study was sufficiently representative, it was decided that a minimum of thirty countries with a good range of geographical, climatic and socio-economic distributions would be necessary.
A letter was sent directly to individual representatives of 154 OIE Member Countries, and leaflets requesting participation in the survey were distributed at the 69th General Session of the OIE in Paris in 2001. To encourage countries to co-operate fully in the study, and to avoid ‘prestige bias’ (19), the aim of the project and its unprejudiced objectives had to be clearly explained and communicated openly. Moreover, the participating countries were assured that all results would be published anonymously.

The participating countries were asked to complete and return the questionnaire within two months. Support was offered in case simple questions of comprehension arose when completing the questionnaire and a small gift was offered as an incentive to those returning the questionnaire.

**Description of the survey sample**

To describe the survey sample, the participating countries were classified in the following ways:

- by continent
- by the climate zones present in the country
- by economic situation
- by political system.

The different climate zones per participating country were determined using a modified Koppen climate classification, with twelve climate zones (21). Also, three economic levels were described, based on the classification system of the World Development Indicators 2000 of the World Bank Group (20), using the per capita gross national product estimates in United States (US) dollars per year for the years 1998 or 1999. To provide the best available starting point for comparisons of economic strength and well-being among countries, the gross domestic product (GDP) in US dollars, derived from purchasing power parity (PPP) calculations, was used. The PPP method involves the use of standardised international dollar price weights, which are applied to the quantities of final goods and services produced in a given economy. The division of a GDP estimate in domestic currency by the corresponding PPP estimate in dollars provides the PPP conversion rate (1).

To determine whether the political system of a country had an influence on the organisation of the national Veterinary Service, two additional classifications were made. The type of government of the participating countries (democracy, republic, monarchy, communist state, transitional government) was identified according to two works:

- the 2000 *World Fact Book* (2) of the Central Intelligence Agency of the United States of America
- the 2002 classification of the organisation ‘Freedom House’. This organisation classifies countries into three levels, according to the degree of political freedom and the political rights and civil liberties enjoyed by their citizens (3).

**Evaluating the suitability of questions**

Substantial emphasis was initially placed on evaluating the usefulness and the practicability of each of the questions, as well as later establishing the validity of the answers (that is, the degree to which the answers reflected reality) (19). In assessing practicability, it was determined how often and in which combinations the different options were chosen for the answers. An option stating, ‘I cannot answer this question,’ was available at the end of most questions, as was the possibility for the respondent to add a short explanation. These findings were then considered when evaluating the suitability of each question. When assessing validity, internal checks within the questionnaire were performed, such as comparing the answers of differently worded questions about similar variables, or responses to questions which demanded logical consistency. For example, giving certain answers to some questions excluded possible answers to other questions.

Validity was also assessed by comparing the answers given to this questionnaire with other sources of information. For some specific questions, this was achieved by using the information available in databases, such as the FAOSTAT agriculture database of the Food and Agriculture Organization of the United Nations (FAO) (4), and the Handistatus II prototype of the OIE (13). The difference between the figures indicated by the countries in the questionnaire and the corresponding figures in these other databases, for the years 1999 and 2000, was evaluated using a simple formula:

\[
D = |a - b| \times (100/b)
\]

where \(D\) indicates the difference between \(a\) and \(b\) in percentage; where \(a\) = the response provided by the country and \(b\) = the reference figure, e.g. from the FAO or OIE database. The median of the differences per participating country was calculated and used to evaluate those particular questions.

For a question to be considered suitable for use as part of a future assessment tool, the authors determined that valid answers to that question would have to be received from at least thirty respondents. Therefore, the number of answers considered to be valid was determined per question and per respondent.

In terms of data management, a database was created using the relational database management system Microsoft® Access 97. Queries and simple descriptive statistics were created directly within Access 97. More extensive descriptive and graphic analyses were created using NCSS Statistical Software.

**Results**

The complete descriptive analysis of the questionnaire and of the answers received has been collated in a technical report, which is available upon request from the first author.
Participating countries

In total, 58 countries agreed to participate in the survey and were then sent a questionnaire (42 of these were in English, nine in French and seven in English with Spanish instructions). Between July 2001 and January 2002, 38 countries returned the questionnaire (31 in English and seven in French. No country which received Spanish instructions returned the questionnaire). This corresponds to 65.5% of the 58 distributed questionnaires, and to 24.7% of the 154 OIE Member Countries which were invited to participate in the study. Twenty-four countries used the electronic version of the questionnaire, ten used paper and four used both.

The 38 participating countries varied greatly in size. While three countries had a geographic area of more than 9,000,000 km², more than 90% of the countries had a total geographic area of 1,500,000 km² or less, and approximately 50% of the countries had 100,000 km² or less (range: 500 km² to 9,975,000 km²). Countries from almost all continents participated in the survey. Even though the sample size was small, it could be shown that all continents, all income classes and all three classes of political freedom were equally represented in the OIE and in the survey sample (Table II).

Table II
Classification of the countries which filled in the questionnaire by continent, income class and degree of political freedom

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Number (%) of countries participating in the survey (n = 38)</th>
<th>Number (%) of OIE (World organisation for animal health) Member Countries (n = 158)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>12 (31.6%)</td>
<td>44 (27.8%)</td>
</tr>
<tr>
<td>Asia</td>
<td>9 (23.7%)</td>
<td>45 (28.5%)</td>
</tr>
<tr>
<td>Europe</td>
<td>13 (34.2%)</td>
<td>39 (24.7%)</td>
</tr>
<tr>
<td>Americas</td>
<td>2 (5.3%)</td>
<td>26 (16.5%)</td>
</tr>
<tr>
<td>Oceania</td>
<td>2 (5.3%)</td>
<td>4 (2.5%)</td>
</tr>
<tr>
<td>Income class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low income</td>
<td>15 (39.5%)</td>
<td>72 (45.6%)</td>
</tr>
<tr>
<td>Middle income</td>
<td>11 (28.9%)</td>
<td>55 (34.8%)</td>
</tr>
<tr>
<td>High income</td>
<td>12 (31.6%)</td>
<td>31 (19.6%)</td>
</tr>
<tr>
<td>Political freedom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High degree of freedom</td>
<td>21 (55.3%)</td>
<td>61 (39.9%)</td>
</tr>
<tr>
<td>Partly free</td>
<td>11 (28.9%)</td>
<td>51 (33.3%)</td>
</tr>
<tr>
<td>Low degree of freedom</td>
<td>6 (15.8%)</td>
<td>41 (26.8%)</td>
</tr>
</tbody>
</table>

a) The classifications per continent and income class are listed for 158 OIE Member Countries (their status as of February 2002). In terms of classification by degree of political freedom, figures for only 153 OIE Member Countries could be determined.

b) North, Central and South America
c) Using estimates of the gross national product (GNP) of each country (per capita) in United States (US$) dollars, derived from purchasing power parity (PPP) calculations, for the years 1998 or 1999. Low-income economies are defined as countries with a per capita GNP PPP of ≤ US$3,300. Middle-income economies are defined as those with a per capita GNP PPP between US$3,300 and US$13,750, and high-income economies as those of ≥ US$13,750.
d) Source: Freedom House, 2002 (5)

Fisher Exact Test p < 0.1). In addition, eleven out of the twelve Koppen climate zones were represented among the countries participating in the survey. Nineteen countries were democracies, fourteen were republics, two were monarchies; one country had a communist government, and two countries had transitional government systems (Table III).

Table III
Cross-tabulation of political systems in the countries which participated in the questionnaire, by continent

<table>
<thead>
<tr>
<th>Political system</th>
<th>Africa</th>
<th>Asia</th>
<th>Europe</th>
<th>Americas</th>
<th>Oceania</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democracy</td>
<td>3</td>
<td>1</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Republic</td>
<td>7</td>
<td>6</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Monarchy</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Communist state</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Transitional government</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>9</td>
<td>13</td>
<td>2</td>
<td>2</td>
<td>38</td>
</tr>
</tbody>
</table>

a) Source: Central Intelligence Agency, 2002 (2)
b) North and South America

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Analysis of responses

All 38 respondents indicated their job title or function in their Veterinary Service. Among them were 14 directors of national Veterinary Services (Chief Veterinary Officers), 16 heads of departments in the Veterinary Service, and eight other veterinary officers or staff members of the Veterinary Service.

Some countries encountered technical problems when entering figures (especially percentages) in the electronic version of the questionnaire, and, in one question, one of the options could not be entered at all. These and other uncertainties were resolved in most cases.

Both the number of questions completed per country and the number of countries answering each of the questions were calculated. The number of questions completed per country ranged from 54 (n = one country) to all 78 (n = four countries). Thirty-six countries answered 69 or more questions (≥ 88.5% of the questions). Twenty-three questions (29.5%) were answered by all 38 countries, and 75 questions (96.2%) were answered at least partly by 30 or more countries.

When assessing the practicability of the questions, the authors found that, in 43 questions (55.1%), the option ‘I cannot answer this question’ had been ticked at least once (between 1 and 14 respondents). In 21 of these 43 questions, the respondent had ticked this option but still answered at least part of the question. In 62 questions (79.5%), comments were made (e.g., explaining why the question or part of the question could not be answered).
When assessing two of the questions on human resources (Fig. 2), contradictions were found in the answers of some respondents. In one question, five countries indicated a number for ‘full-time governmental veterinarians working for the Veterinary Service’ that was larger than the number indicated in the other question for the total number of scientific staff (central/national office and sub-national units). This seemed contradictory, because these veterinarians should be considered as part of the scientific staff. Several countries indicated that they had difficulties answering the first question on scientific versus technical staff, because their staff were classified in a different way. Some countries gave staff numbers for ‘scientific staff’ but not for ‘technical staff’, or only for the ‘central/national office’ but not for the ‘sub-national units’, even though these countries had indicated having sub-national units. The authors therefore compared the answers to this question with the information in the Handistatus II prototype database of the OIE (13). Even though, for some countries, the numbers corresponded perfectly, the authors found important differences in general. The median of the difference $D$ between ‘scientific staff’ (central/national office and sub-national units) and ‘government officials’ (as in the Handistatus II database) for 32 countries was 21.5% (interquartile range = 65.3%). The median of $D$ between ‘technical staff’ and ‘technical personnel’ (with all sub-categories as recorded in the Handistatus II database) for 29 countries was 43.9% (interquartile range = 71.4%).
Similar validations were also conducted for the answers to other questions. For example, one question asked for the percentage of the total geographical area of the country used for livestock farming and other livestock production. To evaluate the quality of the answers to this question, the figures indicated by each respondent were compared with the numbers in the FAOSTAT agriculture database (4). In FAOSTAT, land use is classified as the following:
- ‘agriculture area’
- ‘arable land’
- ‘permanent crops’
- ‘permanent pasture’.

The group which comes closest to the definition given in the questionnaire is ‘permanent pasture’. The difference D between the percentages of ‘permanent pasture’ (as indicated in FAOSTAT for the year 1999) in the total land area and the figures indicated in the questionnaire could be calculated for 24 countries (63.2% of all participating countries). It ranged from 2.8% to 1400%, with a median of 49.2% and an interquartile range of 140.2%.

An additional validation was obtained by comparing the results of some questions with previous studies or historical facts. For example, after stratifying the data on the proportions of veterinarians working in different areas by continent and by income class, it could be seen that, in the case of low-income countries, a large proportion of all veterinarians in those countries were full-time governmental employees. This was particularly true in the case of countries from Africa (Fig. 3 and Fig. 4). These findings are consistent with other studies of animal health services in Africa (8) and in low-income countries in general (7).

The two self-evaluation questions were answered by 36 countries (94.7%). With one exception, all answers were three or above on the scale of one to five (median = four). A significant correlation was found between the answers as to how the countries classified themselves and how they thought their primary international trade partners would classify them (Spearman’s rank correlation co-efficient = 0.72; p < 0.01). Twenty-five respondents (69.4%) indicated the same ranking in both questions. Ten respondents scored their own Veterinary Services one rank lower than the score which they believed their trade partners would give them. Only one country estimated itself one rank higher than the expected score of its trade partners. In general, countries from the high-income class evaluated themselves more highly than countries from the low-income class (Spearman’s rank correlation = 0.52).

After evaluating, analysing, and validating the entire questionnaire, 49 of the 78 questions (62.8%) were still considered suitable candidates for a future assessment tool (i.e., received valid answers from at least 30 respondents). Twelve of these 49 questions received valid answers from all 38 countries (Fig. 5). The authors determined that, to further improve the overall response rate and the quality of the answers, at least
seven of the total of 78 questions should be modified substantially. Twenty-six questions should be modified partly or simplified, and three questions should be modified slightly. Of these 36 questions, 14 were determined to be invalid (receiving fewer than 30 valid answers).

For each of the 38 respondents, the number of questions for which valid answers were given was calculated. This number ranged from 47 to 74 (median = 68). Twenty-eight countries gave answers considered to be valid in more than 80% of the questions. The median percentage of correctly answered questions was 87.2% (Fig. 6).

Discussion

In this first phase of the study, the authors successfully developed a comprehensive questionnaire and identified a set of questions which produced valid information. As far as the authors are aware, this is the first time that such an extensive survey to collect information on national Veterinary Services from such a large number of different countries has been conducted.

An analysis of the responding countries showed that a broad and representative spectrum of OIE Member Countries participated in the survey, resulting in an overall response rate of 24.7%. One of the reasons that no Spanish-speaking country returned the questionnaire might be that these countries had received the information about the study and the instructions for the questionnaire in Spanish, but the questionnaire itself was in English. Further direct enquiry did not reveal an exact reason or explanation for the lack of response in this language group. The fact that relatively few countries from the Americas participated in this survey can also be explained by the above. This must be kept in mind when interpreting the study findings.

The extensive evaluation of the answers and of the comments made by the respondents revealed that some questions were poorly formulated and/or misunderstood by some respondents. Nevertheless, by modifying these questions, some might still be suitable for use. For example, in question No. 20 (Fig. 7), the comments and contradictions found in the answers of some respondents showed that the question was not well formulated, and that the quality of the answers must be doubted in general. Simply adding, as an additional question, whether each particular activity is part of the responsibility of the Veterinary Service would help to determine whether a country did or did not understand this particular question.

Validating the answers to some questions revealed that, while for some information and for some particular countries the data received in this survey and the data in the reference databases (FAOSTAT, Handistatus II) corresponded quite well, important differences could be detected for other countries. For example, the differences found between the answers to question No. 22 (Fig. 2) and the Handistatus II database were considerable (especially for technical staff), even though in...
several countries the figures corresponded perfectly. These differences can be explained partly by the following:

– different definitions of the groups (e.g. ‘Scientific staff’ in the questionnaire versus ‘Veterinarians’ in Handistatus II)
– possible misunderstanding of the question
– comparing figures from different years
– inaccurate numbers (either in the answers to this survey or in the Handistatus II database).

Nevertheless, the figures obtained from the questionnaire should generally be considered correct, for the following reasons:

– the definition in the questionnaire was limited to staff working in the Veterinary Service
– the scientific staff of a Veterinary Service might consist of more than just veterinarians
– the respondents in this survey worked principally in the central/national offices of the different national Veterinary Services (and could therefore be expected to know the exact numbers).

When comparing the figures indicated in question No. 6 (Fig. 8) with the data from 1999 in the FAOSTAT database, it became clear that some respondents indicated the numbers corresponding to the FAOSTAT definition of ‘permanent pasture’, while others indicated the numbers corresponding to ‘agriculture area’ or ‘arable land’. A better definition or a different phrasing of the question would therefore be necessary in a future questionnaire.

The evaluation process also helped to identify questions which were not suitable in their current form or which simply did not seem to produce useful information. In several questions, for example, all or almost all respondents gave the same answer. While the results of these questions might be interesting in a general way, they are not helpful in terms of collecting discriminating criteria for the evaluation of Veterinary Services.

As for the self-evaluation questions, the significant correlation between the answers to the two questions showed that it is unnecessary to use the answers of both questions per respondent. In the second part of the study, the authors will therefore use only the direct self-evaluation question on the quality of the Veterinary Service in the opinion of the
respondent, and discard the question as to how they believed their trading partners would rank their Service.

The extensive data which were collected in this survey will now be analysed further to assist in developing classification rules. One option is the use of recursive partitioning techniques (15). The authors expect this further analysis to result in the development of quantitative criteria for the effective full or partial evaluation and classification of national Veterinary Services. Once such criteria are established, a final version of the questionnaire will be proposed. Further work will then be necessary to develop methods for the integration of the results of this approach in the overall assessment of risks related to the importation of animals and animal products.

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**Élaboration et évaluation d’un questionnaire permettant de définir des critères quantitatifs d’évaluation des Services vétérinaires nationaux**


**Résumé**


**Mots-clés**

Elaboración y evaluación de un cuestionario para identificar criterios cuantitativos de evaluación de los Servicios Veterinarios nacionales


Resumen
Los autores presentan la primera parte de un estudio realizado en gran escala con el fin de elaborar un método para obtener información general, basada en criterios cuantitativos, sobre los Servicios Veterinarios de los Países Miembros de la OIE (Organización mundial de sanidad animal). Esta información puede servir después para evaluar la calidad y la eficacia de esos Servicios Veterinarios, o para su acreditación. Durante el estudio se identificaron criterios objetivos y pertinentes para describir los Servicios Veterinarios, y a partir de éstos se preparó y envió a numerosos Países Miembros de la OIE un extenso cuestionario, en el cual se abarcaban todos los aspectos relacionados con las estructuras y las funciones de los Servicios Veterinarios nacionales. Se procedió después a una evaluación de cada pregunta y de sus respuestas, para determinar su pertinencia. Así se identificaron 49 preguntas que permiten obtener criterios cuantitativos de descripción de los Servicios Veterinarios. En la próxima fase del estudio se analizará más a fondo esta serie compleja de datos.

Palabras clave

References


