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AN EVALUATION OF THE DUTCH CATTLE IDENTIFICATION AND REGISTRATION SYSTEM

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La qualité de l'information du système hollandais d'identification et d'enregistrement des bovins a été étudiée. Toutes les vaches sont identifiées par un code unique à 9 chiffres, et les informations correspondantes sont gérées par une base de données centrale. Les éleveurs, les marchands et les abattoirs enregistrent les données et les mouvements pour chaque animal. Le but de cette étude était d'évaluer la qualité de l'information contenue dans la base de données, en particulier du point de vue de la traçabilité des animaux au cours d'un foyer de maladie.

L'étude a montré que tous les mouvements d'animaux n'étaient pas répertoriés dans le délai obligatoire de 3 jours ouvrés. Plus particulièrement, les génisses envoyées en engraissement, et les vaches de réforme envoyées à l'abattoir sont parfois enregistrées dans un délai de 30 jours. Cependant, en traçant 267 bovins provenant de 21 fermes, on a pu constater que 54 % des animaux ont été retrouvés dans un délai de 24 heures, et 94 % en une semaine, en associant la base de données, et les déclarations de l'éleveur. Le système hollandais d'identification et d'enregistrement est apparu fonctionner de façon très satisfaisante au cours de la situation de crise de Mars 96, lorsqu'il a fallu localiser environ 64.000 bovins provenant de Grande-Bretagne en vue de leur destruction.

En conclusion, la qualité de l'information du système hollandais d'identification et d'enregistrement n'est pas parfaite. Toutefois, le système a été utilisé avec succès pour localiser des animaux importés. Il donne aussi une information fiable sur la présence des animaux dans les fermes à un moment donné. Par la suite, la qualité de l'information de ce système devrait être améliorée 1) en y enregistrant les animaux renvoyés au vendeur, 2) en enregistrant aussi les animaux transitant par les marchés et chez les négociants.

INTRODUCTION

In the eighties, the Dutch system of cattle identification that was based on sketches of the color pattern of cows became less workable, due to increases in herd size and more single colored beef cattle. A system for identification of slaughtered cattle was needed and the cattle traders wanted less paperwork. With the above reasons in mind, the Dutch cattle Identification and Registration (I&R) system was launched in 1990, organized by the Animal Health Service. The system was originally designed to identify each cow uniquely, and secondly, to register where each cow was located.

The quality of the information in the I&R system was analyzed in '94, particularly with the goal of tracing animals during a disease outbreak. In addition, the I&R system was evaluated in a crisis situation, i.e. the fast localization of all British veal calves in the Netherlands in March '96. Results of both evaluations will be presented in this paper, as well as some future developments.

CURRENT DUTCH I&R SYSTEM

All cattle farms in the Netherlands have a unique farm number (7 digits) and all cattle are identified by two identical eartags. The 9 digit eartag number is unique for each cow within the Netherlands. Four numbers on the eartag (unique within farm) are printed large so the farmer may use the same eartags for daily management. The full number is also present as a barcode which can be read with a special scanning device. To complete the I&R system each mutation related to an individual cow and farm must be recorded within 3 working days in a centrally organized data base. Mutations in the data base include entrance (birth or import), movement between farms (trading, pasturing), or exit (death or export). Cow information is retained in the active data base 15 months after death/export (36 months since January '97).

The responsibility for mutating the cow records in the data base lies with the directly involved people: farmers, traders and slaughterhouses. Farmers may enter the mutations themselves by telephone through a 'voice response system', or ask their breeding organizations to enter it through a terminal. In the slaughterhouses eartags are mostly scanned after slaughtering. In the large veal fattening units, commonly all calves are scanned when the unit is completely filled up. Scanned data can be downloaded automatically into the central data base. This system seemed to cover the original goals: as long as an animal does not lose both eartags, it is uniquely identified, and as long as farmers, traders, and slaughterhouses report the mutations properly, an animal can be localized with the help of the central data base. Enforcement of the obligatory system is mainly through warnings, fines and reduction in payments for animals during a disease outbreak situation. Farms are visited once every 4 years to check their I&R compliance, and additional farm visits may be based on repeated error messages of the system.

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INFORMATION QUALITY ANALYSES

A first analysis was performed on 85 farms of which the farmers recorded on paper all movements of persons and animals on and off their farms during a 2-week period in December '94. Five days after the 2-week recording period, data related to those farms were downloaded from the I&R data base.

According to the paper forms 38 farms had moved 78 cattle (35 calves) off and 14 farms had moved 36 animals onto their farms. According to the I&R system 69 of the 78 cattle (88%) were moved off a farm, but only 18 of the 36 cattle (50%) were moved onto a farm. The actual movement day coincided within 1 day (before or after) of the date of the I&R mutation in 43 of the 87 mutations (50%). However, particularly calves were actually moved off the farm at a later date than recorded in the I&R system, up to 7 days. For practical reasons, farmers are allowed to report in 1 voice response message the birth of a calf combined with the off farm mutation if the calf leaves the farm within 1 week. The date of the voice response message automatically becomes the I&R off mutation date.

When all I&R mutations regarding the 85 farms within the 2-week study period were analyzed, it appeared that more animals were moved on and off the farms than were reported by the farmers on paper. A lot of those animals were already reported slaughtered in the system by the time they were moved off the farm. Most likely this was an administrative 'catching-up' action of the farmers caused by the participation in the study.

A second analysis was performed on 21 farms in the South of the Netherlands. The farms were visited to check if the number and identity of cattle actually present on the farm matched with a list based on the I&R system. On the 21 farms a total of 2662 cattle were present according to the I&R system. In total 142 administrative errors were found during the farm visits (Table I). Almost all animals that had not been reported off the farm (105 of 107) were already slaughtered, some of them months ago. This agrees with the results of the first analysis, in which farmers had not reported animals for slaughter very accurately.

Table I

Type of errors (N = 142) which occurred on 21 farms (2662 animals) in the last 30 days before the farm visit.

Error type	N	%
Animal away, not yet mutated	107	75.4
Animal present > 1 month, not on list	18	12.7
Animal recently present, not yet mutated	13	9.2
Animal present, mutated off	2	1.4
Male/female wrong	2	1.4

Based on the farm visits it appeared that in total 267 animals were moved off the 21 farms in the month before the farm visit, (160 already mutated in I&R, 107 not). Animals that were not sold for slaughter were on average reported onto the next farm 38 days (calves) or 11 days (other cattle) later. In an outbreak situation such animals could have carried a disease elsewhere, and would have to be traced as soon as possible. The results of the tracing of those 267 animals are in Table II. Of the animals that were traced within 1 day, some were still present on the farm, and others were already reported on a new farm in the I&R system. Animals that took longer were mostly traced by the conventional way of asking the farmer who traded the animal, phoning the trader and in some cases phoning more persons, including slaughterhouses.

Table II

Number of days to trace animals (N = 267) off 21 farms, relative to the day of the farm visit.

Days	N	%
Within 1 day	144	53.9
Within 2 days	53	73.8
Within 3 days	31	85.4
Within 4 days	14	90.6
Within 5 days	5	92.5
Within 6 days	2	93.3
More than 6 days	18	100

For the third analysis, 45 farms in the South were visited. These 45 farms were a random selection of 222 farms which had caused a total of 1511 error messages during a period of 29 days (approximately 20.000 mutations: 7% errors). The most common cause of errors (1332 of 1511) was that an animal was reported onto a farm more than 30 days after the last mutation. In other words, the animal had been 'floating' for over 30 days.

On the 45 farms in total 410 error messages were related to 410 'floating' animals. The trading history of the animals was checked. Seven animals were reported off and on the same current farm, so it was a mistake of the farmer. Fifty-three animals had been directly traded from their last farm, and 349 animals had been traded trough a trader, and 1 animal through more traders. Many traders in the Netherlands have a unique trading farm number, but very frequently cows are not reported on and off such trading farms, particularly if cows are traded on within 3 working days. Cows are thus only re-emerging in the I&R system when the buyer reports the cow onto his farm. A group of 302 calves coming from many different farms, which were moved onto 1 veal fattening farm through 1 trader caused 74% of the errors (302 of 410). So calves seem to be 'floating' quite frequently, as was seen in analysis 2 as well.

CRISIS WITH BRITISH CALVES

In March '96, because of a perceived BSE risk, the Minister of Agriculture decided to destroy all British-born veal calves in the Netherlands which therefore had to be found quickly. The I&R system was used locate those calves.
According to the initial I&R output, 64,139 live British animals were present in the Netherlands on 21 March '96. All farms with those animals were easily identified, based on their unique farm identifier, related to owner and address.
A further closer analysis revealed the following. Some calves were imported before 21-3, but reported in the I&R system at a later date, and had to be added to the total (+ 5007). Other calves had been slaughtered before 29-3 (slaughter ban), but were not mutated yet as slaughtered on 21-3 (- 6247). Other calves had died on the farm and were properly mutated only after 21-3 (- 408). Another 707 calves were registered as British, but came from another country (scanning mistake). Some animals were imported before 1990 (import ban), and were not calves (- 85). This added up to 61,699 calves that had to be destroyed after 29-3.
At the end of the action, 59,283 calves were reported as destroyed, leaving only 2416 calves (61,699 - 59,283) not properly accounted for. Those 2416 were looked into and it appeared that 142 calves had been reported as destructed twice. This was most likely caused by mistakes in eartagging the calves after import, such as tagging a calf with 2 different eartags. In 2 slaughterhouses, 1638 calves from 8 farms had been slaughtered before 29-3, but the mutations were not present in the I&R system, although they had been reported and the paper administration of the slaughter houses was correct. Several farm visits revealed that another 139 calves had died on the farms in the meantime, but without a mutation in the I&R yet, and 497 had been incorrectly reported off the farm by the farmer, while in fact they had died on the farm. So administratively speaking, all British calves were accounted for.

DISCUSSION AND FUTURE PLANS

The current Dutch cattle I&R system comprises of more elements than are minimally required for animal identification according to EU regulations. Specifically, the central data base was not required. Based on the '94 analysis, however, this central data base was not always up to date. The responsible persons seemed to be a bit lax with the maximum reporting delay of 3 working days. This was in fact accepted by the system administrators, because they only considered an animal 'floating' when the last mutation was over 30 days ago. Nevertheless, the majority of the British calves were located very quickly (half day) with the help of the same data base. The analysis showed that trading of live animals is not very well represented in the I&R system, because short duration locations such as markets and trading farms are not reported in the data base. Better and faster reporting of mutations by all parties involved would improve the information in the Dutch I&R system. Particularly for fast tracing as needed for an outbreak of Foot and Mouth Disease, the system should be more up-to date. However, even with the current lag, animals were located fast and the system gave a good indication of which animals were present at a farm at any moment.
For the near future, some changes in the I&R system are required based on new EU legislation per 1-7-97. Requirements will be : 1) mutations have to be reported within 14 days of their occurrence up to the year 2000, after that within 7 days, 2) the mutation has to report the actual movement date, 3) not only the farmers, but also markets and traders will have to report all animals that were on their premises, 4) up to 2000, meat labeling based on cow identification is possible, after 2000 this will be obligatory, 5) a national enforcement scheme must be present.
The current Dutch I&R system falls mostly within the new regulations, only the markets and traders will have to report more frequently. Improvements are planned, however. In the near future slaughterhouses should be able to receive on-line information on a particular cow as well as on the health status of the farm that the animal came from. The rendering plants will start to report to the I&R system which cattle were rendered, which will lead to a reduction in 'floating' animals. Currently animals which die on the farm are often (wrongly) reported off farm by the farmers.

REFERENCES

References are available from the first author.