

COMPUTER BASED MEAT INSPECTION SYSTEM

POSSIBILITIES AND LIMITATIONS

FINN OVE SØRENSEN

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INTRODUCTION

Meat inspection is primarily carried out with the aim of protecting the public health.

However, some countries have recognized that pathological conditions diagnosed through meat inspection may - in addition - be utilized in connection with surveillance of the animal health status in the whole country or - if the animals are owner identifiable - at herd level.

At herd level the meat inspection information may be used not only for surveillance purposes but also as a diagnostic tool in connection with the solution of health problems in the herd.

Meat Inspection has so far per tradition predominantly consisted of a macroscopic single animal control which made good sense when diseases like tuberculosis prevailed.

However, more and more people acknowledge that today this macroscopic single animal control is more of esthetic than public health value.

It may consequently be expected that emphasis in the future will shift from the macroscopic meat inspection to the "microscopic", i.e. with emphasis on production hygiene, residue examinations and zoonosis caused by *Salmonella*, *Campylobacter* and *Yersinia* species which are not macroscopically identifiable.

As a result, the public health directed meat inspection will get an increased need for information created outside the meat inspection régime, and the traditional meat inspection data indicating the animal health status of the herds, will be heavily reduced unless they can be collected, recorded and dealt with without any particular extra costs.

This development will give rise to demands for integrated information systems combined with data collection and -processing.

THE PUBLIC HEALTH DIRECTED MEAT INSPECTION may, in addition to the data collection and processing at the place of slaughter, need a flow of data to herds and external laboratories.

The aim of this data flow could be:

1. A differentiated meat inspection where the animals, based on the herd's previous meat inspection history, are killed together with animals from herds of equal health status.

The advantage should be the possibility of a more flexible manning of the inspection on the slaughter chain adjusted according to the "disease load".

This differentiated meat inspection may be an advantage for the poultry industry, where large, uniform flocks of animals are raised and killed together. It is, however, in Denmark not considered profitable in connection with the slaughter of pigs and cattle, where the benefits of flexible manning are limited compared to the extra costs required by a more complicated handling to slaughterhouse transport procedures.

The benefits of a more flexible manning are also diminished by the already mentioned tendency towards less emphasis on the macroscopic meat inspection.

2. A differentiated killing where the planning of slaughter is based on the - through the information system

known - "health status" of the supplying herds. The purpose could be prevention of cross-contamination of for example Salmonella from Salmonella carriers to Salmonella free animals during transport, housing and killing.

The idea is obvious within the poultry industry and it should be considered in connection with other species.

3. An integrated information system aimed at the surveillance for unwanted residues.

Many countries - including the EEC-countries - have for several years toiled with residue surveillance programmes comprising livestock in the herds as well as slaughter animals, carcasses and meat products.

Demands for coordinated efforts in this area including recording, tracing, exchange of information etc. can be expected.

THE ANIMAL HEALTH DIRECTED MEAT INSPECTION may support the live-stock holder and his advisers through disease surveillance and pathological diagnostic services. This support may - as already mentioned - be in jeopardy in the future unless data collection and processing to a large extent can be considered fringe benefits from other investments in the slaughter plants carcass identification and information systems.

The livestock holder and his advisers may have the following needs:

1. "Early Warning" when the meat inspection diagnoses acute lesions where the herd owner should be advised to cancel further deliveries for the time being - for example acute pleuropneumonia.

This early warning could be given through an integrated information system linked with a herd terminal. It must, however, in most cases be considered more practicable to give this information by telephone.

2. Health surveillance of the herds and consequently total animal population. This is an important tool for the authorities, the scientists and the individual producer and his advisers.

It has been discussed if such a surveillance should be based on few or on many meat inspection diagnoses. It is a typical cost-benefit question. How large is the investment and can the results be utilized - or rather - how will the herd owner and his advisers use them.

Present investigations show that comparatively few diagnoses are sufficient, if the purpose of the surveillance "just" is to indicate herds with more than average health problems.

The meat inspection system in Denmark and many other countries provide for the recording of many more diagnoses but unfortunately rarely for diagnoses of the plucks, intestines and uro-genital organs - diagnoses very relevant in connection with treatment of herd health problems.

The meat inspection diagnoses have in Denmark for several years been used to indicate problem herds and all producers have on their pay-kill-return received information of some of the diagnoses.

Some years ago it was considered to further differentiate and extend the recording of the diagnoses and communicate the information to the producer quickly and easily through computer terminals placed in the herds.

This idea has until now been considered unfeasible due to cost-benefit considerations. However, new integrated information systems may now bring a change and especially if the missing plucks, intestinal - and uro-genital diagnoses could be routine information.

3. Extended disease examination of animals from individual herds and carried out on the owners demand. This service deals with concrete herd health problems, where an extended post mortem

examination of the slaughtered animals may be part of the veterinary diagnostic tools.

This is consequently a non-routine, ordered examination based on a specific anamnesis and where samples - if required - are taken to laboratory examinations.

As a non-routine examination it does not depend to any extent on an integrated information system but it will of course be facilitated by all improvements in animal and carcass identification, data collection - processing and distribution.

CONCLUSION

The trend of livestock production and meat processing are in most countries towards fewer but bigger units.

This development will demand but also make it economically possible to establish computer based integrated information systems. This will open up possibilities in the fields of health surveillance, disease prevention and applied epidemiology in the public and animal health areas.

The traditional, macroscopic, single animal meat inspection will eventually be phased out and replaced by a more integrated control of the food production from stable to table.

This will demand an easily accessible two-way communication between the primary producer and his slaughterhouse.

Meat inspection and plant management must at all times have access to the health status of the supplying herds and the primary producer and his advisers must equally - as one of the parameters in their herd management model - have access to the meat inspection data, which - due to the fast technological development - might be economically justifiable to collect, even if the benefits from a public health point of view are limited.

However, the benefits of the computer techniques will also here ultimately depend on the user's abilities and willingness to harvest the advantages.

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