The development of pathological findings on pig farms in the years 2010 - 2014 at a slaughterhouse in Český Brod and the summary overview of medication according to data from breeders

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Abstract

An elaboration of data from the slaughterhouse in Český Brod - Veterinary Hygiene Centre (VHC) from findings made during veterinary inspection following the slaughter of 851 911 pigs over the course of five years was done in this paper. Intravital findings on lungs and other organs, their development on the farm over the years and comparison of supplier farms was included. Large producers of pigs improve and stabilise the state of health of pigs in dependence on medication administered. Regular inspections, checks on medication administered and monitoring of heterogeneous substances and zoonoses are all part of the work of the VHC.

Intravital findings on pig organs, medication on farms, monitoring heterogeneous substances, monitoring zoonoses, veterinary hygiene inspection after slaughter

Introduction

Our study of the five-year development of pathological changes is facilitated by the fact that the origin of the slaughtered pigs and the specific farms involved changed little over the course of the years. Jatky Český Brod, a.s. (Český Brod Slaughterhouse) slaughters fattening pigs exclusively from the Czech Republic. The properly completed Food Chain Information (FCI) on all the pigs must be received in accordance with the requirements of Regulation No. 853/2004 supplied to it by breeders accompanying the given animals, thereby assuring their unambiguous identification.

Checks on the FCI and its recording in the Slaughter Module of the State Veterinary Administration Information System take place at the Veterinary Hygiene Centre (VHC) in Český Brod. Findings from post-slaughter inspections are also added to the records on file in the Information System. Reports are then sent to the e-mail address of the breeder.

We check FCI data, in particular medication, with the individual breeders and with veterinary prescriptions in the data warehouse in the State Veterinary Administration Information System and with colleagues from the Regional Veterinary Administration responsible for supervising the farms in question who are able to perform retrospective checks on all medication given in the FCI in the medical records of the animals in question on the farm. The monitoring of foreign substances and targeted control sampling can also be used to check data accuracy.

We also obtain information from colleagues who perform routine medical care on farms and are interested in closely monitoring macroscopic changes in the lungs, particularly following enzootic pneumonia (Mh), actinobacillus pleuropneumoniae (APP) and chronic pleuropneumonia (ChPP) – i.e. screening, lung scoring, etc.

Data on the numbers of pigs from individual farms slaughtered and inspected in the given years was obtained from the State Veterinary Administration Information System.

The aim of this study was to compare findings made during post-slaughter inspection over the last five years (2010–2014) for farms that send animals to slaughter to Jatky Český Brod, a.s. To ensure good readability of graphs, we present results of large suppliers (from

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about 24 000 to 4 500 pigs in 2014) separately from those of smaller suppliers. Independent farmers are compared separately.

We present a comparison of:

1) findings on the lungs between individual farms in the given years, and
2) the development of findings on a number of specific farms over the years.

The following graphs show a percentage comparison of intravital (i.v.) changes in relation to the total number of inspected pigs on each farm in the given year.

The state of health of animals from individual farms is reflected, first and foremost, in repeated i.v. changes in their lungs, heart, liver, stomach, gut and kidneys. Synoptic graphs present findings on the lungs.

Sporadic findings of suspected TBC changes to the lymph nodes have generally appeared on the same farms in recent years (see synoptic Fig. 1. Findings of tuberculoid changes). The overwhelming majority of examinations of these findings confirm the agent to be Rhodococcus equi (R. equi), which weakens immunity in the herd. It is, according to epidemiologists, also a risk for weak individuals and children.

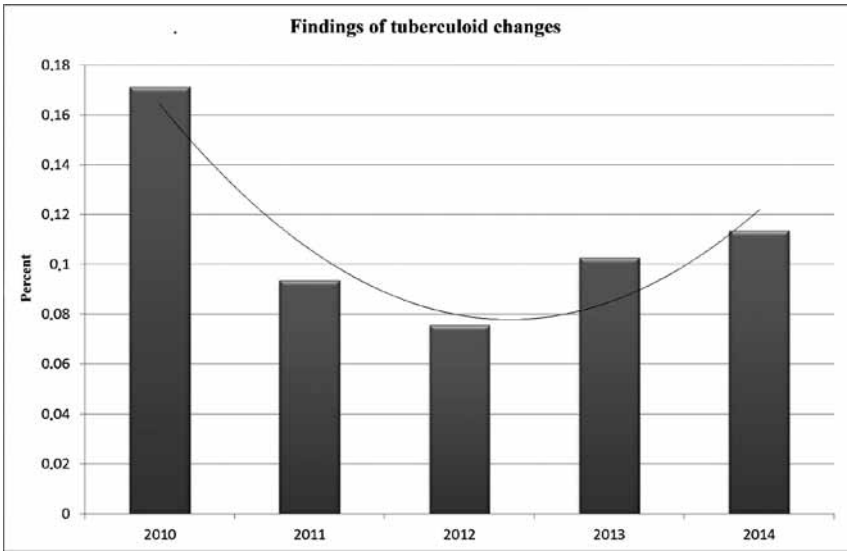

Fig. 1. Findings of tuberculoid changes in animals slaughtered at Jatky Český Brod

Comparison of pathological changes in the lungs

The prevalence of pathological findings testifies to respiratory diseases on many farms. Letters are assigned to suppliers according to the volume of deliveries in 2014 (A is the farm delivering the largest number of animals).

Although the majority of suppliers are permanent suppliers, there have been certain changes in their structure over the years. (Plate IX, Fig. 2).

The largest supplier (A) is characterised by a continually extremely good situation in relation to health and findings in the lungs. Supplier B improved the state of health in 2010 at considerable expense and is continuing to maintain this situation. Lung condemnation is at around 10% level, similar to farms C, G, I and K. (Plate IX, Fig. 3).

Farms M, N, O, Q and W are characterised by pigs of a stable and extremely good state of health. Intravital changes to the lungs do not exceed 10%.

Overall, these graphs show a trend towards improvement on the great majority of farms as a result of great efforts of their employees in primary production combined with large costs. (Plate X, Fig. 4).

The situation is, unfortunately, the opposite in the graph showing findings for independent farms. Both the percentage of i.v. findings and, in many cases, the extent of the changes, is on the increase. Two of these farms (the exception being farm X) do not, according to FCI data, administer medication.

A comparison of findings in multiple organs on selected farms

Independent farmers try administering antihelminthics, in spite of that findings are generally worse than on large farms. The findings in the liver from farm "Z" are alarming, with practically no healthy liver remaining from their pigs. Findings in the lungs are generally comparable with the large farm P given above, though this farm implements overall health improvement measures, which are extremely costly for small farmers.

The conclusions arising from the graphs above are statistically significant and correlate with this year's current findings by veterinary technicians at the Veterinary Hygiene Centre in Český Brod. Inspections are performed there by the same employees of the Regional Veterinary Administration of the State Veterinary Administration for the Central Bohemian Region – Kolín Inspectorate – on a daily basis. Breeders study their immediate reports following slaughter for primary production. They have lung screening performed on their other pigs at the slaughterhouse. Alongside our employees, our colleagues in the field perform detailed inspections at the slaughterhouse focusing on the type and extent of pathologies. They take their own samples focusing on the agents of disease, including determination of their sensitivity to ATM. We provide them with assistance and generally have their conclusions at our disposal. Breeders are also acquainted directly with our sampling and the results of our investigations – checks and monitoring.

Similar analyses of the state of health of animals on farms should precede the administration of all further veterinary preparations, particularly those whose optimal effect is conditional to the good state of health of the animal, such as preparations for immunological castration which require a good immune response. Jatky Český Brod does not slaughter pigs to which preparations for immunocastration are being administered because part of the blood of these pigs is used in the production of immunopreparations for children. (Plate X, Fig. 5), (Plate XI, Fig. 6).

The graphs show the example of the two largest suppliers – extremely good farms where the employees responsible for routine medical care take an interest in the slaughter of each and every one of "their" pigs.

The next example is a farm on which treatment of the lungs is successful, though the performance of deworming is proving unsuccessful over the long term; findings of lesions on the liver have multiplied here in recent years. We emphasis this fact in reports for the welfare department of the pertinent Regional Veterinary Administration as we believe the given repeated mass serious disorder to the liver is not justifiable on the farm in question. (Plate XI, Fig. 7).

Farm "P" had long-term problems with respiratory disease in pigs, though it administers antihelminthics to deworm the animals. The farm is currently under complete reconstruction, following which its operation will be recommenced. (Plate XII, Fig. 8), (Plate XII, Fig. 9), (Plate XIII, Fig. 10), (Plate XIII, Fig. 11).

Findings from the Monitoring of Zoonoses and Foreign Substances over the years; an overview of drugs used in 2014

Sampling is conducted in accordance with the state plan for monitoring of zoonoses. Over the five years, there was only one finding of Salmonella on the farms. We alternate between the farms during sampling in accordance with the valid methodology.

No violation of the regulations was discovered during MFS in these years. No finding of the administration of prohibited substances or maximum residual limits for permitted substances being exceeded was made.

Fig. 12 shows drugs used on the fourteen farms of the largest supplier of pigs. Fig. 13 shows the farms of other suppliers. (We do not differentiate classes of drugs or methods of administration. The names of drugs are taken from the FCI).

The volume of deliveries of pigs from the farms of the largest supplier is approximately the same as supplies from all the other breeders put together. Only a small percentage of breeders state that they provide no medical treatment during fattening. The segments in the graphs represent numbers of animals to which a drug was administered during the course of fattening according to the FCI. (Plate XIV, Fig. 12), (Plate XIV, Fig. 13).

The sum of the numbers given in the individual graph segments is, of course, larger than the total number of slaughtered animals, as it is usual to use more than one drug ("Average number of drugs per delivery, i.e. during the stipulated period of pig fattening") (Fig. 1 and 2). The source of data for these graphs is the overview we keep during FCI checks in the application Excel. At the present time, these data cannot be collected in the State Veterinary Administration Information System. Many breeders also send animals for slaughter to other slaughterhouses, and those data are therefore unavailable.

We perform a number of targeted samplings for determining agent sensitivity. These have shown a small number of cases of individual agents of respiratory diseases resistant to antimicrobials (ATM). The question for the experts remains how well targeted these studies are in respect of the ATM actually used. The blanket collection of the given data at the Veterinary Hygiene Centre into the State Veterinary Administration Information System and output from this data would also aid the correct targeting of investigation.

Conclusions and Results

The work at the Veterinary Hygiene Centre under the motto "One Health" is interesting. It is of truly great importance to real meat safety and the health of consumers, of which there are, in the case of Jatky Český Brod, a.s. and the like, hundreds of thousands a day. Good routine inspection following the slaughter of each individual animal reveals every acute fluctuation in the state of health of the herd, in addition to chronic changes. Immediate feedback from the slaughterhouse to the farm is then also important.

Veterinary hygiene work at the slaughterhouse involves the monitoring of zoonoses, with possible expansion to include other agents of infection, and monitoring of the occurrence of residues (MFS) of veterinary drugs, including those actually administered on specific farms.

The falling trend in pathological findings in pigs from large suppliers over the last five years is good news, though we also see it in the context of the medication administered. Large pig producers cannot do without the long-term sustainable use of antimicrobial substances. This anticipates knowledge of the sensitivity and resistance of disease agents to the medication administered. The correct use of drugs is also in the interest of the processors putting meat on the retail market. The widely-known fact that the volume of drugs for mass drug administration is not falling, in spite of the falling numbers of fattening pigs in the Czech Republic over the long term, is alarming.

The long-term sustainable use of antimicrobial substances is possible only if consumers are protected at the same time. Veterinary inspection at the slaughterhouse plays a part in this. Veterinary post-slaughter inspections should be specified as the time and place for the collection of altered tissue samples in mass findings (from a stipulated % of animals inspected). These would then be sent for bacteriological analysis and the determination of the agent sensitivity to antimicrobials planned for use on the farm, and the information would

then be reported back to the farm in question. If that does not happen, the situation cannot be rectified anywhere further down the food chain ending with the human metabolism. This active monitoring and the data resulting from it, along with data from the FCI, could be used in the data warehouse by veterinary surgeons before checks in production facilities.

Attention must be paid at VHC in the Czech Republic to the collection of breeder data from FCI on the administration of all veterinary drugs that require some withdrawal time (WT) in a stipulated period (the weight of the pigs may be a better indication), as well as to the length and method of their administration and the observation of the WT. Many breeders send animals for slaughter to various slaughterhouses. The legislation on mandatory FCI data also relates to imports of pigs that also end up on our tables. The absence centralize collection of these data in the Czech Republic could be easily eliminated by the State Veterinary Administration's new Information System. Output from this blanket data could also be used in the area of ATM policy by the Working Group for Antimicrobials at the Ministry of Agriculture, the Institute for State Control of Veterinary Biologicals and Medicines and other specialists in pig breeding. In connection with Ministry of Agriculture subsidies, targeted output could operate as an effective check of the fulfilment of the obligations of correct ATM practice on farms.

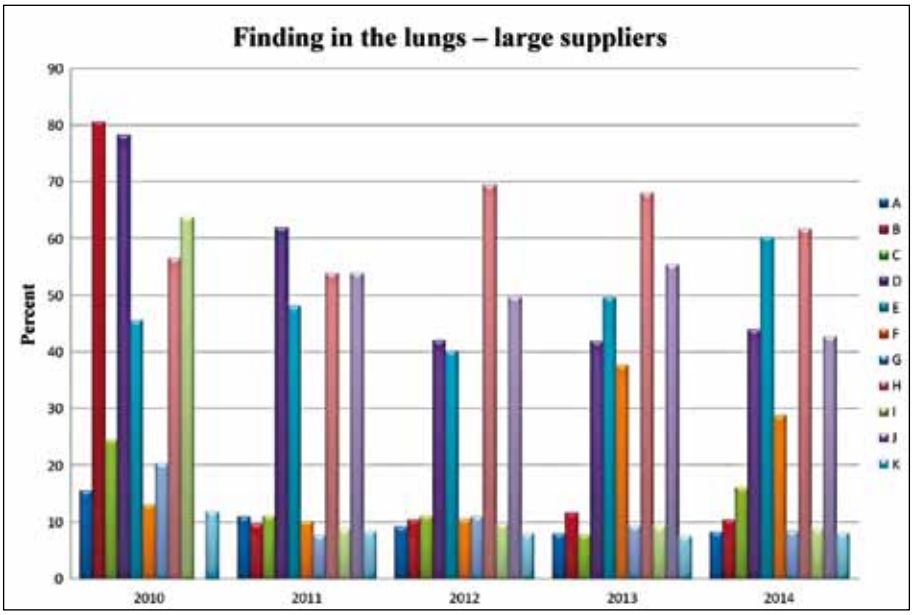

Fig. 2. Findings in the lungs of pigs from "large" suppliers (~ 4 400 – 25 000 animals/year)

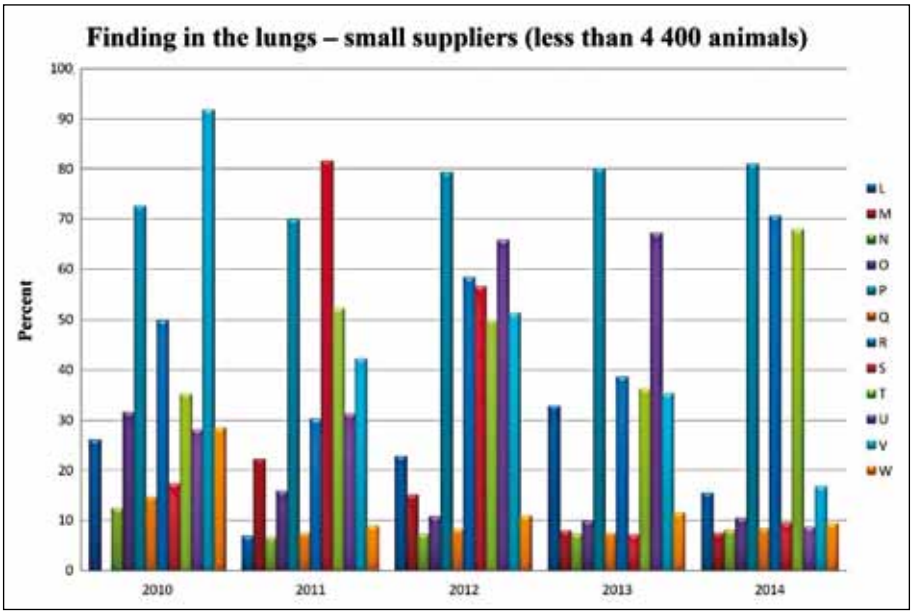

Fig. 3. Findings in pig lungs from "small" suppliers (less than ~ 4 400 animals/year)

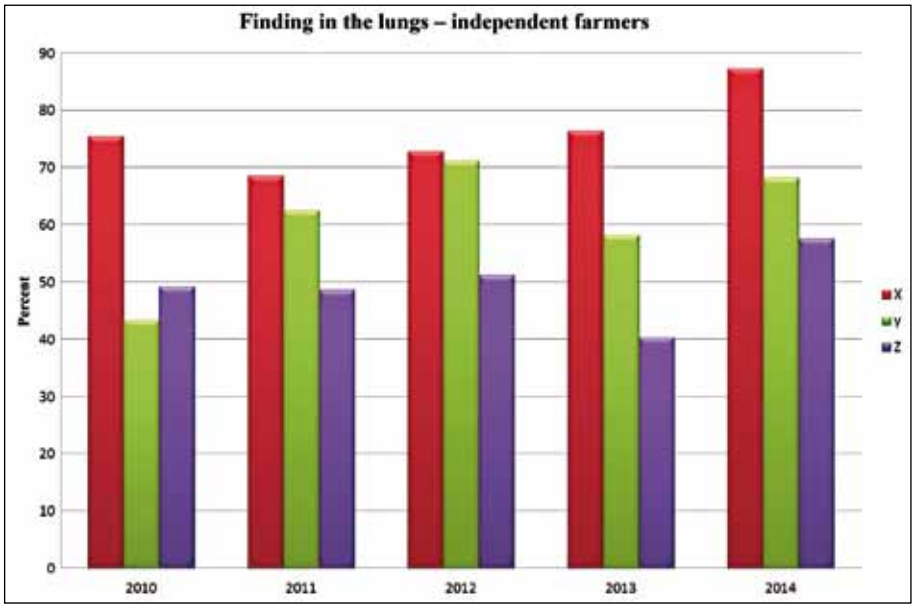

Fig. 4. Finding on the lungs of pigs of independent farmers

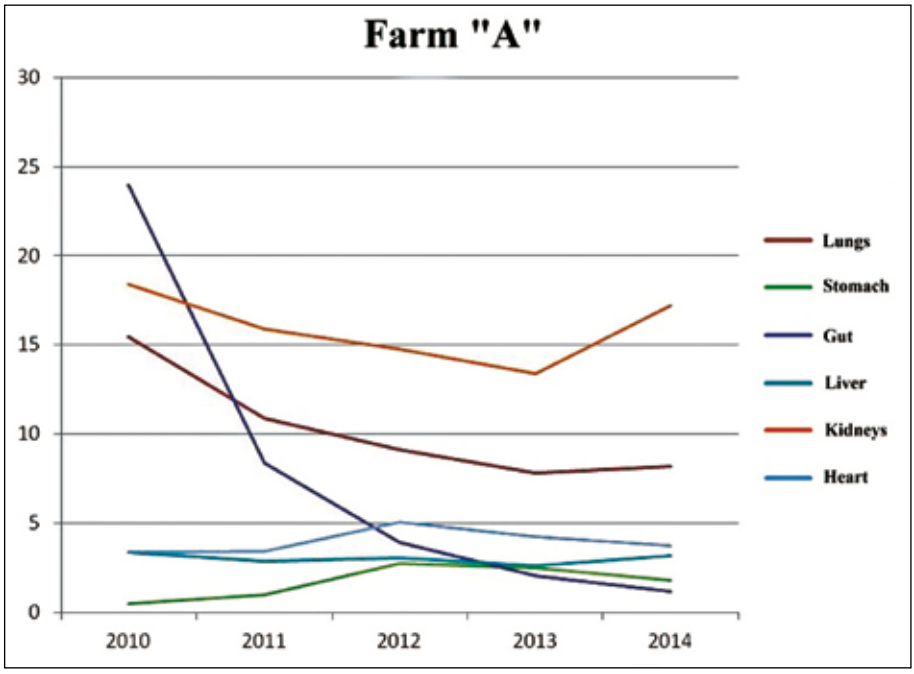

Fig. 5. Findings of pathological anatomical changes to the organs of pigs from farm “A”

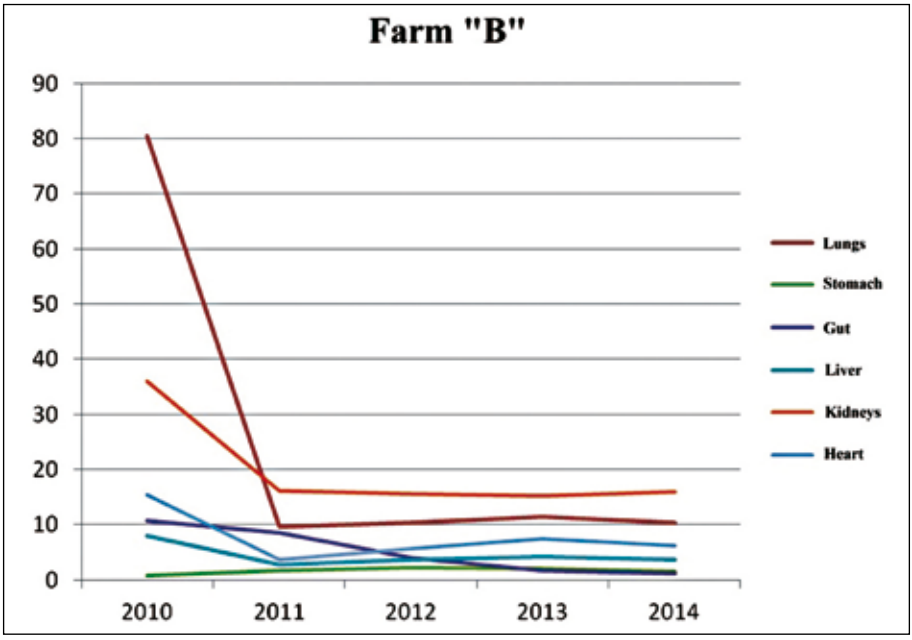

Fig. 6. Findings of pathological anatomical changes to the organs of pigs from farm “B”

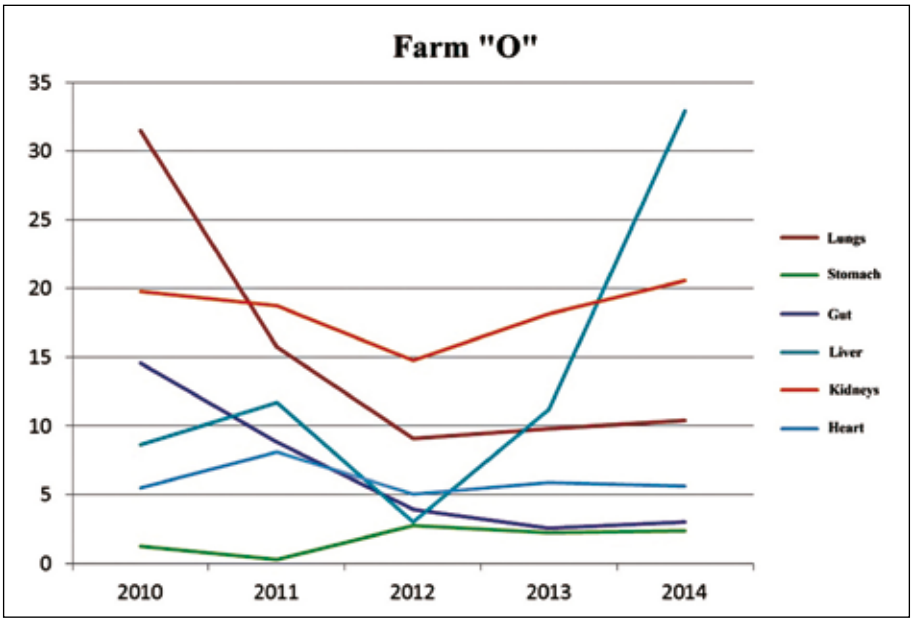

Fig. 7. Findings of pathological anatomical changes to the organs of pigs from farm “O”

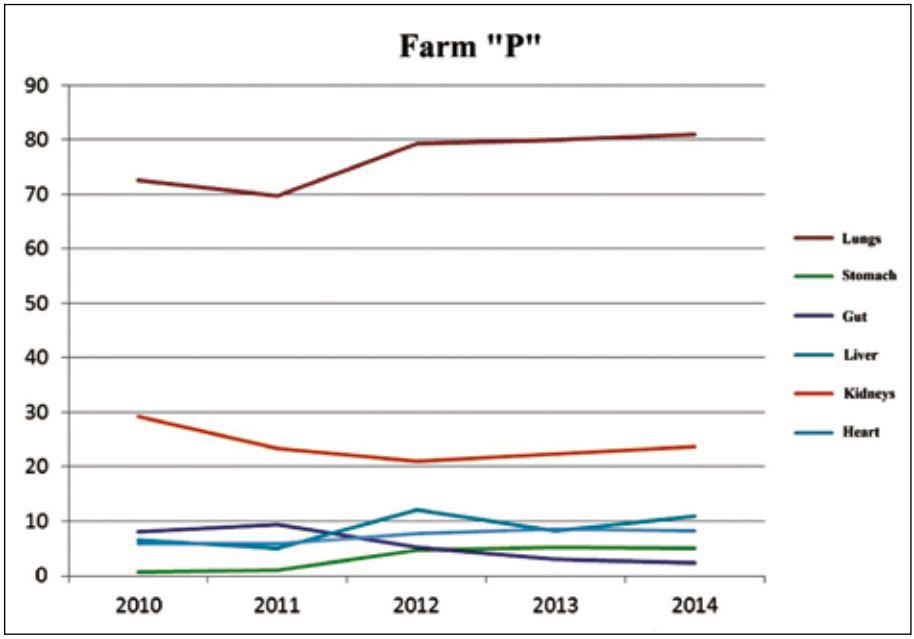

Fig. 8. Findings of pathological anatomical changes to the organs of pigs from farm “P”

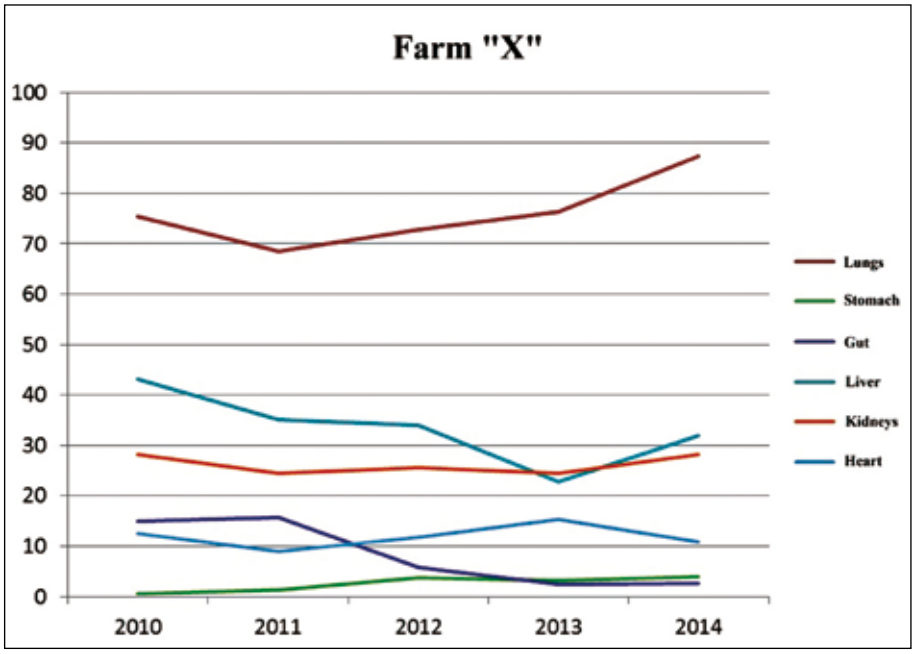

Fig. 9. Findings of pathological anatomical changes to the organs of pigs from farm “X”

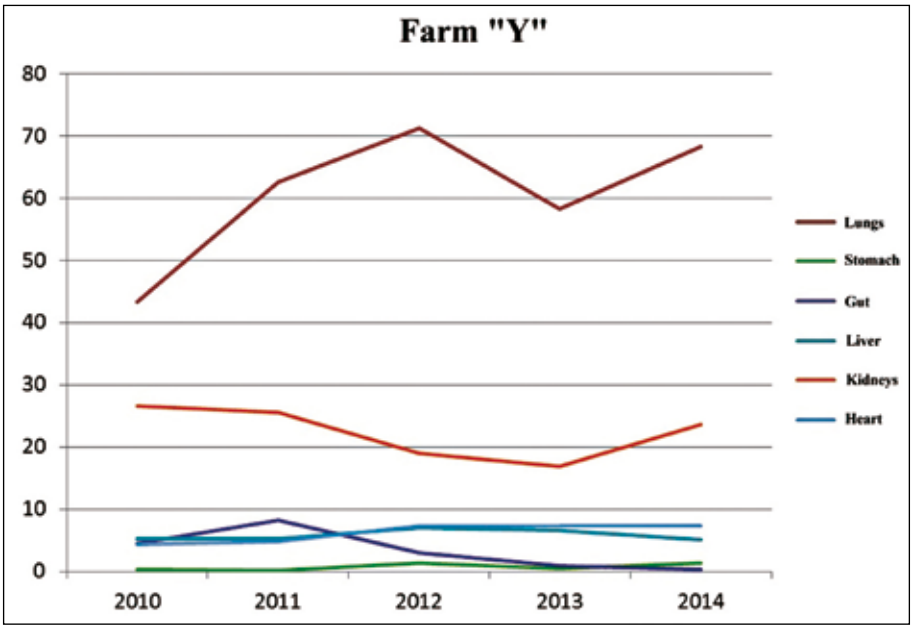

Fig. 10. Findings of pathological anatomical changes to the organs of pigs from farm “Y”

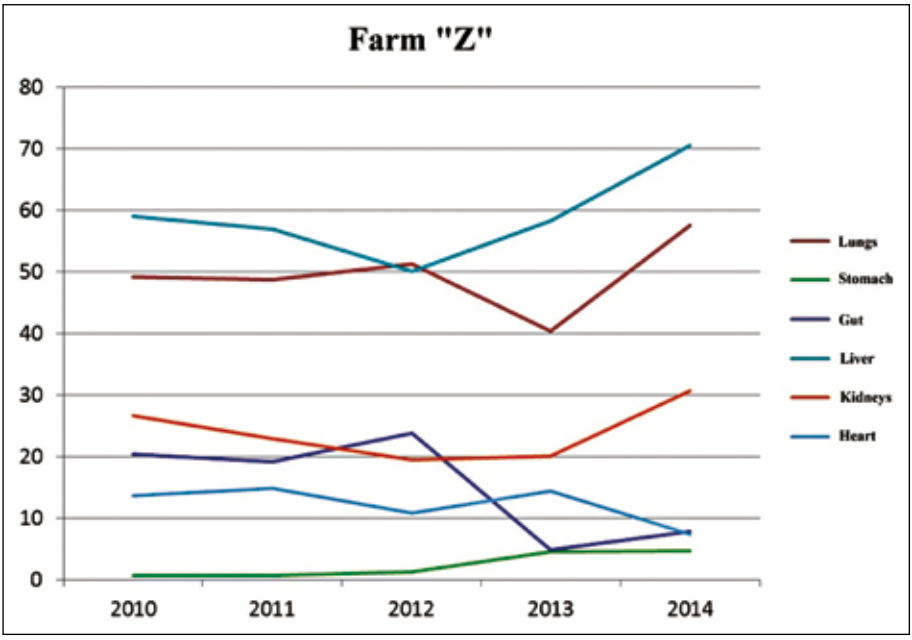

Fig. 11. Findings of pathological anatomical changes to the organs of pigs from farm “Z”

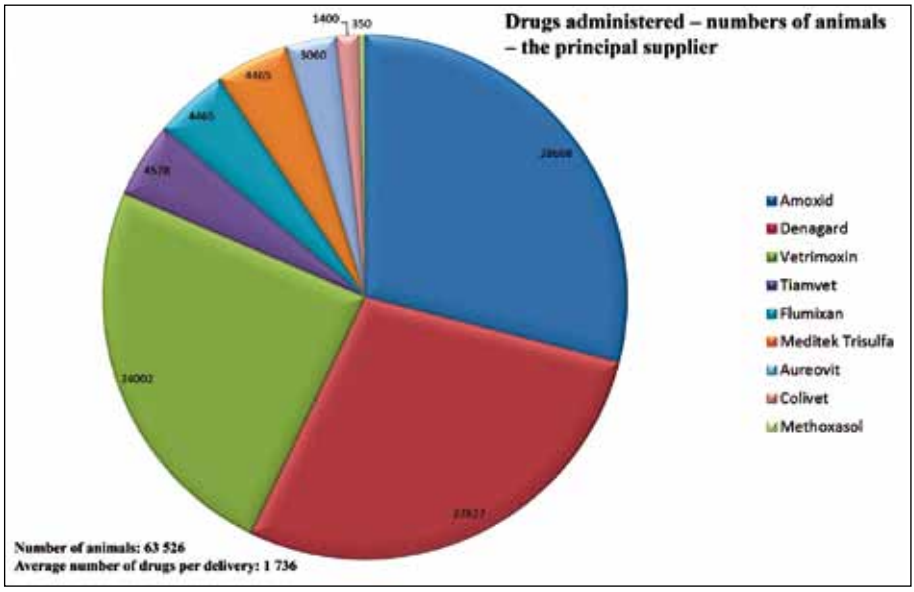

Fig. 12. Drugs administered by the principal supplier (numbers of animals)

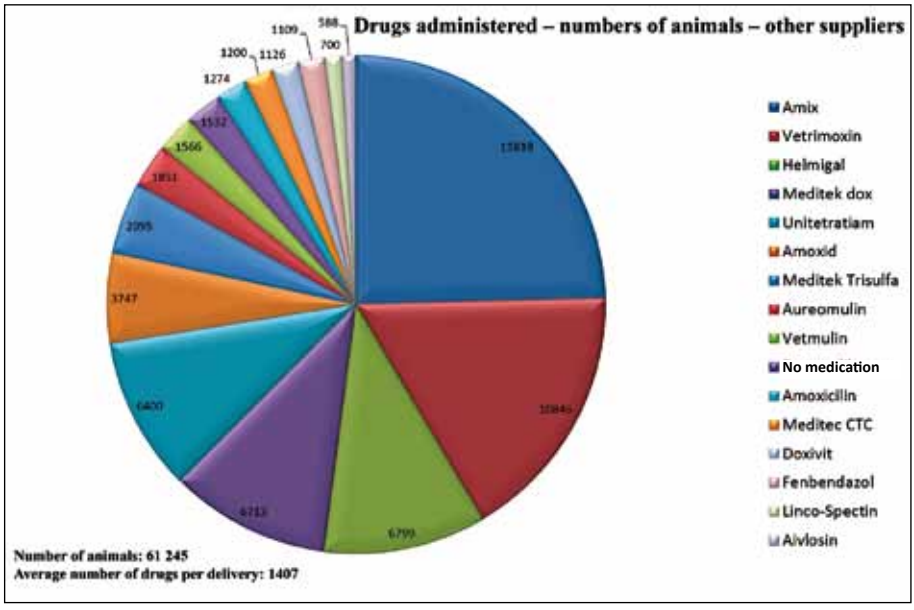

Fig. 13. Drugs administered by other suppliers (numbers of animals)