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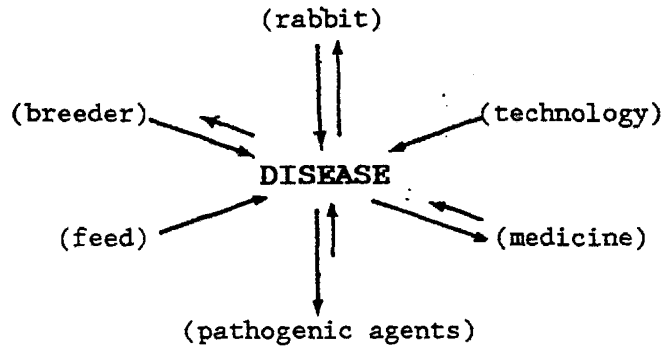
GENERAL PATHOLOGY OF THE RABBIT : A CONCEPT WHICH MUST BE REVIEWED EVERY DAY.

Pierre COUDERT

INRA, CR de Tours, 37380 Nouzilly, France

Everywhere in the world from North to South Man invented numerous systems to breed rabbits and this is how he created rabbit pathology. The motivations, production level, capital invested in the husbandry and professional infrastructure are different in every country. This structural polymorphism induces a tremendous diversity of pathological phenomena differing not only in their intensity but in their nature as well. Moreover, for example, mortality of 10% during all the husbandry period (that means from birth to the abattoir) will be considered by one breeder as unbearable, while for another one it will be the ultimate aim of his life. The only common point of view of those two breeders will be to require more competences from the pathologist.

There is nothing surprising or abnormal in this situation, because now everybody is more or less convinced that pathology is a result of a complex equation :



Nevertheless, it raises at least 5 fundamental questions that must be recalled here before we listen to the next lectures.

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WHAT ABOUT THE COMMUNICATIONS PROBLEM ?

Every one of us works within certain well defined social, technical and cultural frames. This does not prevent the communication between two geneticists for instance, since a coefficient of inbreeding does not depend on the breeders professional level, the cellulose content in feed and finally on the quantity of antibiotics given to the rabbits every Monday morning, either.

Diarrhoea due to 0103 E. coli is more connected to a husbandry method than to the pathogen itself and that is the reason why one country can discuss the pathogenic agent with the other one, but the discussion about the epidemiological factors responsible for this colibacillosis risks to fail because of the differences in breeding methods.

In the same way the epidemiology of Pasteurellosis differs in laboratory facilities and in industrial farms. To exchange any information on this subject one would have to describe the ecosystem, which is unfortunately much more difficult than to describe the disease itself.

To make a long story short : every pathologist is rather isolated inside his own circle.

This isolation is enhanced by the fact that very few scientific journal at the top level accept the papers dealing with the ecological aspects of a disease. Moreover : there is no real "rabbit equivalent" of "Avian Diseases" or "Poultry Science" and our literature is scattered over numerous journals.

WHAT ABOUT "BEING OUT OF BREATH" ?

The most important factors responsible for the appearance of a disease (see the equation above) may vary in each country. Moreover for one particular country these factors keep changing, so that a new syndrome emerges while the other one disappears. The pathologist is then a long distance runner and his future is settled... if he is not out of breath. He often falls out of the frying pan into the fire and becomes a victim of the progress to which he contributed himself so much.

Nobody in Western Europe is anymore concerned in coccidiosis (a nice research subject in the 70ties), since all attention is given to an awful intestinal pathology, much more complex and multifactorial than that due to coccidia.

This multifactorial pathology arose as a result of the intensive rabbit production policies allowed by our friends the geneticists, the nutritionists and the technicians.

For the researcher who realizes perfectly that he needs 4 or 5 years to complete any serious research subject , the most important question is now to avoid focusing his interest on the "tree that hides a whole forest behind".

WHAT ABOUT THE SCIENTIFIC STRATEGY ?

Faced with this uncomfortable situation (only scarcely caricatural) the scientist has another choice. Instead of always coming too late to the battle field, he can put all the variable factors of an ecosystem aside and focus on a constant one, that means on the individual. These are two kinds of individuals to be studied by the pathologist : the animal (for example its immunological system) or the pathogenic agents.

Gradually, the scientist will have to make up his mind and choose one of these options. Pasteurellosis will become a capsular epitope presented by an *Antigen Presenting Cell* desperately seeking a *Competent B-lymphocyte*.

Now it is time to allow the others to take care of the ventilation system in the farm and to attack fundamental research with the blows from that royal and glorious tool called *"molecular biology"*. I strongly believe this must be the direction that the rabbit pathologists should turn their interest to.

So much the worse for today's and tomorrrow's breeders, but it is necessary for those who will come the day after tomorrow.

WHAT ABOUT THE CHOICE OF FACTORS ?

Refering to the factors making up our initial equation we must admit that attending to what is the most urgent, we used to take an interest in all of them (e.g. in breeder, technology, feed, etc...) except for the rabbit itself!

The result is "in the aggregate positive", because rabbit science exists, yet it seems we have reached our limits.

One has to recognize that we know very little about the rabbit as an individual and we do not know his physiology, his immunology, his mechanisms of adaptation and -last but not least- his fondnesses (ethology).

WHAT ABOUT THE MULTIDISCIPLINARY COLLABORATION ?

Our initial equation points out that a pathological phenomenon involves the whole system : breeder, geneticist, nutritionist and sometimes , ... a pathogen.

Without any doubts this will not be accepted by everybody. As I said in the very beginning we all come from different horizons. In Western Europe researchers give their attention only to the intensive rabbit production so that in my opinion the specific diseases are no longer the main cause of economical losses. The parasitic diseases of first importance like coccidiosis, helminthiasis, mites are under control, the vaccines against known viruses (Myxomatosis, VHD) are available, the bacterial diseases appear in limited number (Pasteurellosis).

Undoubtedly the etiologists have still a lot of hard work to do, but in fact if will be our ignorance of the rabbit immunological system that will put the limits to medical prophylaxis, and nothing else.

It has to incite us to collaborate closer with researchers studying similar problems in other livestock species.

Opposite to these specific disorders, the morbid non-specific phenomena (often of multifactorial or metabolic origin) are -in our system- those we are not able to overcome.

The mortality of does is still an important problem not only for the direct losses it causes but also for the cost of the structures necessary to replace the culled does.

The mortality of newborns and sucklings remains of importance even in the absence of identified infectious diseases.

Multietiological intestinal disorders predominate during the faltening period and their frequency and intensity vary depending on the breeding method.

This kind of pathology brings once more to the fore the necessity of a multidisciplinary approach, involving pathologists, nutritionists, physiologists and the unavoidable geneticists.

CONCLUSION

Regarding the strong interaction pathology <--> system of husbandry, my conclusion will be valid in the situations we meet in industrial farms of the Old World.

The general pathologists have helped to create rabbit breeding as a modern and profit-earning animal production.

Being torn between the field and the laboratory the proper choice of a research subject has been unceasingly questioned.

Today the situation becomes more stable and the perspectives now offered to rabbit science make us notice our basal lack in knowledge of the rabbit species. It is urgent to take up the studies of rabbit immunology and physiology. That makes the multidisciplinary approach still more necessary as we seriously risk that this sort of science turns very soon purely "cognitive" and that the researcher charmed by a fascinating molecule forgets the rabbit, although some thinkers pretend that their esoteric research are universally useful...

Let's hope that some scientists who don't worry about their career any longer will confirm their interest in ecosystems and epidemiology in order to question once more the explosive feed compositions of the nutritionists, the high risk interbreedings of the geneticist and the demoniacal inventions of the technicians and of the breeders themselves.

World Rabbit Science Association