FEATURE ARTICLE

THE VILLAGE CHICKEN AND DISEASE CONTROL*

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VILLAGE CHICKENS

Village chickens account for the majority of chicken production in Africa. In contrast to the industrialised production existing in the large urban areas, village chicken flocks usually comprise between 5 and 20 birds. A similar situation exists in Asia. An increase in the productivity of village chickens can help stabilise the village economy, providing a localised food source and thus contributing to slowing down the movement of people from the country to cities. Thus it is wrong to think of the support of village chicken production as merely an intermediate stage before the development of fully industrialised production. It is rather a sustainable alternative. In some industrialised countries, such as Switzerland, there is already a reaction against industrial poultry production methods, and legislation is being introduced to make it less intensive. Another factor is the generally perceived superior taste of the village chicken, as opposed to its industrial counterpart, whose taste can often reflect feed components such as fishmeal. In Morocco, for example, this is reflected in the price of the village chicken which is twice that of the industrial broiler. The village chicken production system deserves to be considered on its own merit.

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Epidemiology

Before devising appropriate control measures, it is necessary to know what the principle diseases are. Throughout Africa, Newcastle disease has been cited as the most significant disease (Chabeuf, 1990). Newcastle disease is a fatal viral disease, characterised by an incubation period of about 4 days and up to 100% mortality. Symptoms are respiratory, digestive and nervous (Alexander, 1991). It is the effect of the virus on the digestive system which is fatal, whereas the nervous symptoms are seen in the survivors. Serological surveys carried out in different regions of Morocco, Mauritania, Benin and Cameroun showed the presence of high antibody titres against Newcastle disease virus in every region studied indicating, in the absence of vaccination, the presence of the virus (Agbede et al., 1992; Bell et al., 1990 and Bell and Mouloudi 1988). Where viruses were isolated and characterised, these were invariably velogenic, the most virulent type. The same findings have been reported wherever the prevalence of Newcastle disease has been studied in Africa.

After Newcastle disease, it seems that one of the most significant disease problems is caused by parasites, both internal and external. Serological surveys have also shown the presence of infectious bursal disease virus and

Salmonella pullorum/Salmonella gallinarum, which cause Gumboro disease, an immunosuppressive disease, and pullorum disease/fowl typhiod respectively (Bouzoubaa et al., 1992). At present the effect of these diseases is probably masked by that of Newcastle disease.

Control

In a situation where Newcastle disease is endemic, such as in Africa, slaughter can not be considered as a viable control measure, since it would result in killing the entire population. The only alternative is vaccination. Two basic kinds of vaccine are currently commercialised for use against Newcastle disease: live vaccines and inactivated vaccines.

Live vaccines can be lentogenic (of low pathogenicity) or mesogenic (of intermediate pathogenicity). They can be applied in drinking water, by aerosol or by eye-drop. Of these methods, the most suitable for village poultry is eye-drop, since specific drinking water is not usually given and the numbers in flocks are relatively low. Live vaccines have the advantage of being able to spread between birds, and they are relatively cheap. Their major disadvantage in the village situation is the necessity to keep them refrigerated.

Inactivated vaccines are usually given by intramuscular injection. They produce a better immunity than live vaccines, particularly when birds have been primed with a live vaccine or natural infection, and have a less rigorous requirement for refrigeration. They are, however, more expensive than live vaccines.

A controlled vaccination trial which we carried out under village conditions in Morocco showed that both these types of vaccines can significantly reduce the mortality in village chickens and turkeys caused by Newcastle disease (Bell et al., 1990). Poultry in four distinct villages were vaccinated with inactivated vaccine and Hitchner B1 vaccine given as eye drop, and poultry in a fifth village were monitored as a control. Sixty three percent of the chicken population died during 20 weeks of observation and necropsied birds showed lesions consistent with Newcastle disease, whereas mortality did not exceed 20% in the villages where poultry was vaccinated.

Mention should also be made of the theoretical possibility of selecting chickens for resistance to disease. While no practical applications of this are at present available, the possibility of selecting native African chickens for improved immunological response to disease is currently being investigated (Agbede et al., 1992).

South East Asian experience

There are two possible problems with the application of the types of vaccines described above. One is the conservation of the vaccine at a sufficiently low temperature in remote regions in a tropical climate, and the other is catching the chickens. Both these problems are solved in principal by the application of a strategy developed in Malaysia which involves applying a heat resistant live vaccine on feed (Copland, 1987).

The vaccine is derived from a lentogenic strain of virus originally isolated in Australia, V4. A thermostable clone was selected from this. Then application on different feedstuffs was tested. While application on feed has the

advantage that the chickens do not have to be caught, the serological response, and hence the protection provided, is not as great as if the vaccine is applied directly

Strategies for Africa

A clear priority is vaccination against Newcastle disease. While the conventional vaccines work, if applied under good conditions, it seems worthwhile testing the thermostable V4 vaccine. This could be applied by eyedrop under appropriate circumstances. The FAO Pan African Vaccine Centre (PANVAC) located in Ethiopia and Senegal has already taken steps to acquire the V4 seed vaccine and start preliminary trials in Africa.

The African Network for Rural Poultry Development, administered from Nigeria, has been set up to coordinate research on village poultry.

With vaccination trials, it would be useful to have a standardised method of sero-monitoring, to evaluate serological response, and in this respect the Joint Animal Health Division of the FAO/International Atomic Energy Agency is proposing the use of a uniform ELISA kit which can be transported throughout Africa and used with an existing network of equipment supplied for the rinderpest campaign (Bell et al., 1991).

CONCLUSION

The control of Newcastle disease remains a priority for village poultry production. Although this question has been long neglected, it is finally attracting the interest of bodies such as the FAO. Village poultry production is a very important food source for rural Africa and it merits support in its own right.

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