

THE INCIDENCE AND DISTRIBUTION OF LUNG LESIONS, ASSOCIATED WITH ENZOOTIC PNEUMONIA,  
IN PIGS FROM 2 FARMS, AND THE EFFECT OF THE EXTENT OF THESE LESIONS ON WEIGHT GAINS.

D.G.S. BURCH, SQUIBB EUROPE INC., SQUIBB HOUSE, 141-149 STAINES ROAD, HOUNSLOW, MIDDLESEX, ENGLAND.

### Introduction

Enzootic pneumonia (EP) is a very widespread disease of pigs, in all parts of the world. The primary aetiological agent is *Mycoplasma hyopneumoniae* (Goodwin, 1965, Maré & Switzer, 1965) and under intensive farming conditions the disease is complicated by secondary bacteria. The most frequently isolated organism is *Pasteurella multocida* but many others have been found (Little, 1975).

The lesions associated with the disease are typically found on the distal parts of the apical (A) & cardiac (C) lobes and less frequently on the intermediate (I) and diaphragmatic (D) lobes and take 3-6 weeks to develop established lesions (Stage 3) as described by Whittlestone, (1972).

The number of pigs affected with the disease varies from herd to herd, and the extent of the lesions varies from pig to pig within a herd. The major effects of the disease are to reduce growth rate and feed conversion efficiency and to increase mortality and treatment costs (Goodwin, 1971, Braude, 1975, Muirhead, 1978).

While carrying out UK field trials, with the antibiotic tiamulin (Dynamutillin - E.R. Squibb & Sons Ltd) in herds affected with EP, the opportunity arose to utilise some of the data and report on the incidence and extent of lung lesions and relate these to the pigs' growth performance.

### Methods

The trials were carried out over 2 months during the fattening period (average weight range 30-70 Kgs). The pigs were individually identified, and weighed at 4 week intervals. On 2 farms all of the pigs were slaughtered at the end of the trial, and their lungs were examined for the presence of EP lesions and each lobe was scored by the method of Goodwin, (1979). The A and C lobes had a maximum score of 10, the D and I lobes were 5, giving a total maximum score of 55. The lung scores for each pig could then be correlated with its growth rate over the previous month prior to slaughter.

### Results

The percentage incidence of lung lobes affected with EP lesions is demonstrated in Table 1 (affected pigs only).

TABLE 1: Percentage Incidence of Lesions on a Lobar Basis

Farm	Left Lung				Right Lung		
	A(%)	C(%)	D(%)	I(%)	A(%)	C(%)	D(%)
1	41.3	77.5	39.9	63.0	64.5	70.3	44.2
2	48.3	75.3	41.5	37.1	60.7	59.6	37.1
Ave.	44.8	76.4	40.7	50.1	62.6	65.0	40.7

On farm 1 there was a 93% incidence of EP and an average lung score (ALS) of 10.6 and on farm 2 there was an 80% incidence and an ALS of 8.1. Farm one's pigs had been clinically affected for most of the trial (8 wks) whereas Farm 2 started in the second month (4 wks)

The pig weights were arranged under their respective lung score groups as summarised in Table 2.

TABLE 2: Ave. Weight Gains (Kg) for Each Lung Score Group

Farm	Lung Score					
	0	1-10	11-20	21-30	31-40	41-55
1	27.0	26.0	23.9	23.4	22.5	15.5
2	18.2	19.2	18.3	13.5	10.8	7
Ave.	22.6	22.6	21.1	18.5	16.7	11.3

The results were further subdivided into lung score ranges of 5, and both farms' results showed statistically significant ( $P < 0.05$ ) reductions in weight gains

from the 16-20 lung score range upwards.

If these results of the affected pigs are compared with those displaying no lung lesions, a reduction in performance is observed.

TABLE 3: Percentage Reduction in Performance and Percentage of Pigs Slaughtered

	Lung Scores					
	0	1-10	11-20	21-30	31-40	41-55
% weight reduction	0	0	6.6	18.1	26.1	50
% pigs slaughtered	12.4	55.2	17.4	9.3	4.2	1.5

On farm 1, a pig had the maximum score of 55 and its growth rate was depressed by 80%.

### Discussion

The percentage lobar incidence of pneumonia correlated well with previous slaughter house surveys (Osborne, 1981) for the A and C lobes, however, the incidence for the I and D lobes was higher. This could be a result of the high level of infection in the 2 herds (93 & 80% incidence).

The reduction in weight gain results clearly indicate a relationship with the increase in lung scores. This has also been reported in sheep (Jones, 1982). It was suggested that the more extensive the lesions, the more severe the clinical disease and this would have a direct depressant effect on appetite and growth, especially in the acute stages of the disease. Secondly, the damaged lung tissue may have a detrimental effect on metabolism. Goodwin, (1971) suggested that *Mycoplasma* may also have a detrimental metabolic effect.

It was interesting that the group with a lung score between 1-10 showed no depression in growth rate but that pigs in the higher score range 40-55 had a reduced growth rate of 50%. This would explain why severely affected pigs appear to stop growing, and may require an extended period of several weeks to finish.

### Summary

During the course of field trials, in herds with severe pneumonia problems, individual pig weight gains for the month prior to slaughter were correlated with their lung lesions scores.

The incidence of lung lesions on a lobar basis compared well with previous slaughter house surveys. A reduction of weight gain was clearly associated with an increase in lung scores. Pigs with lung scores between 1-10 did not appear to be affected, but pigs in the highest range, 40-55, grew at half the rate of unaffected pigs.

### References

- Braude, R. et al. (1975) *Veterinary Record*, 96, 359-360.
- Goodwin, R.F.W. et al. (1965) *Veterinary Record*, 77, 1247-1249.
- Goodwin, R.F.W. (1971) *Veterinary Record*, 89, 77-81.
- Goodwin, R.F.W. (1979) *Veterinary Record*, 104, 194-195.
- Jones, G.E. et al. (1982) *Veterinary Record*, 110, 168-173.
- Little, T.W.A. (1975) *Veterinary Record*, 96, 540-544.
- Maré, C.J. & Switzer, W.P. (1965) *Veterinary Medicine & Small Animal Clinician*, 60, 841-846.
- Muirhead, M.R. (1978) *P.V.S. Proceedings* 3, 103-120.
- Osborne, A.D. et al. (1981) *Canadian Veterinary Journal*, 22, 82-85.
- Whittlestone, P. (1972) *Ciba Foundation Symposium 'Pathogenic Mycoplasmas'*, 263-279.