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A high prevalence of atrophic rhinitis (AR) was found in both market hogs and sows in a slaughterhouse survey in Illinois in 1979-80 (Backstrom et al., 1980). On the basis of the results it was decided to conduct a more comprehensive investigation of the disease.

#### METHOD OF SCORING:

Snouts on randomly selected pigs were cut transversely at the first premaxillary teeth, and gross turbinate atrophy and septum nasi deviation was graded 0-3 respectively. Mild but obvious gross turbinate atrophy was graded 1, while grade 3 was given for a total atrophy of the ventral scrolls. The grade of turbinate lesions was weighted two times the value of septum deviation to a combined score of 0-9 (e.g. atrophy 2 + deviation 1 = combined score 5). A combined score of 1-3 was considered mild AR, 4-5 moderate AR, and 6-9 severe AR.

The greatest mm space between the ventral scroll and the ventral/lateral border of the nasal cavity was also recorded for 259 market hogs. The mean mm space for healthy pigs (AR 0) was found to be 2.62 mm (range 1-5 mm), 4.32 mm for mild AR (range 1-8 mm), 7.53 mm for moderate AR (range 3-11 mm), and 10.67 mm for severe AR (range 5-15 mm, where total turbinate atrophy was given the value of 15 mm). The wide range indicates that gross turbinate lesions and nasal distortion are not always straight positively correlated to the mm space.

#### DISEASE PREVALENCE:

Random slaughter checks were conducted on 1457 market hogs and 345 sows at four slaughterhouses in Illinois. 42% of the market hogs did not have any gross pathology AR lesions, 40% showed mild lesions, 12% moderate lesions, and 6% severe AR lesions. The figures for the sows were 50%, 36%, 9%, and 5% respectively.

6 herds were selected for further research. In herds T, W, and A 5-10% of the pigs showed clinical symptoms of AR with sneezing, snout distortions, and sometimes epistaxis. No clinical signs were seen in herds M, N, and S. At slaughter AR and pneumonia were recorded on 25-30 market hogs from each farm. No correlation was found between AR and pneumonia. The severity of AR varied between the herds with a very high prevalence of the disease in herd T, medium high in herds W, M, and A, low in herd N, and almost no turbinate lesions at all in herd S.

| Herd | No AR | Mild | Moderate | Severe AR | Pneumonia |
|------|-------|------|----------|-----------|-----------|
| T    | 5%    | 27%  | 46%      | 23%       | 5%        |
| W    | 30    | 40   | 25       | 5         | 35        |
| M    | 35    | 35   | 26       | 4         | 18        |
| A    | 38    | 33   | 19       | 10        | 15        |
| N    | 45.5  | 45.5 | 9        | 0         | 0         |
| S    | 95    | 5    | 0        | 0         | 3         |

#### EFFECT OF AR ON DAILY WEIGHT GAIN (ADG):

In the 6 herds selected daily weight gain was calculated from birth to slaughter in dressed carcass weight and correlated to score of AR in 20-25 hogs in each herd. A significant negative correlation between ADG and AR was found in herds T and W, but not in herds A, N, and S. Herd W was not tested. In herds T and M the growth retardation was up to 20% in hogs with severe AR lesions.

Linear regression for ADG at increasing severity of AR was calculated (figure 1).

#### DISEASE TRANSMISSION:

Strict all-in all-out sanitation procedures were maintained in small farrowing and nursery units in herds T, M, and S, but not in the other herds. Despite the intensive sanitation procedures the prevalence of AR was high in both herd T and M, indicating a significant disease transmission from the sow to her piglets.

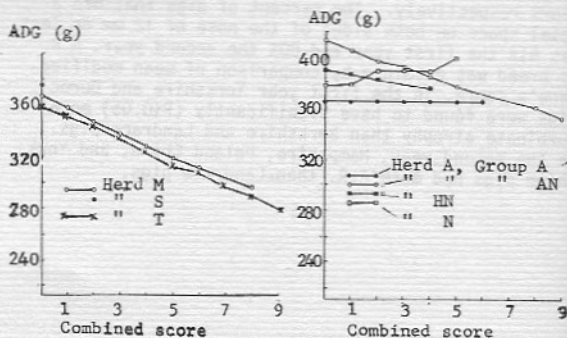
A mild form of AR without any clinical symptoms was prevalent in herd N. Purebred breeding stock was marketed from this farm, and it was decided to study the risk of disease transmission from those pigs under field conditions. 10 pregnant gilts from herd N were moved to farrow in herd HN where no pigs had been kept for two years. Another 10 gilts (AN) were moved to farrow in herd A, where atrophic rhinitis had been a clinical problem for several years. A third group of 10 gilts from the same gilt pool were kept to farrow as controls in herd N. In herd A home raised gilts were also kept as controls. At slaughter 20-25 randomly selected offspring of the different gilt groups were recorded for snout lesions:

| Group of pigs | No AR | Mild  | Moderate | Severe AR |
|---------------|-------|-------|----------|-----------|
| N             | 45.5% | 45.5% | 9%       | 0%        |
| HN            | 46    | 42    | 8        | 4         |
| AN            | 38    | 33    | 19       | 10        |
| A             | 35    | 30    | 22       | 13        |

The incidence and severity of AR was almost identical in the N and HN pigs, and in the A and AN pigs respectively, indicating a transmission of the disease from the sow to her piglets (HN), and a transfer of the disease from other diseased pigs (A to AN). The incidence of severe AR was significantly increased in the AN pigs compared to the N and HN pigs.

Daily weight gain was not significantly correlated to score of AR in the N, HN, and A pigs. A significant negative correlation between ADG and score of AR was found in the AN pigs (figure 1).

Figure 1. Linear regression for ADG at increasing severity of AR.



REFERENCE: Backstrom, L., Johnson, W., Memon, M., and Hoefling, D.: Diseases in swine recorded by post-slaughter checks at a slaughterhouse in West Central Illinois. Proc. IPVS Congress, Copenhagen, 1980, 359.