Summary

A *Mycoplasma hyopneumoniae* One- Shot vaccine in comparison to a conventional Two- Shot vaccine in a commercial farrow- to- finish pig herd with low health status

The goal of this study was to gather information about the influence of different vaccination schedules on clinics, growth- and slaughter achievements, lung score, and development of immunity in pigs.

3 groups were compared. The first group was vaccinated with a Two- Shot vaccine on day 7 and 28 after birth, the second group was vaccinated with a One- Shot vaccine on day 7 after birth. The third group received 0,9% NaCl as a placebo and served as a control. The study took place between August 2004 and March 2005. In this time period animals were surveyed and if necessary medically treated. Blood was taken regularily from a sample of animals for immunological research. At slaughter the lungs were evaluated with a lung score system and samples were taken for microbiological examination. Weights were taken at birth, after weaning, when moving to the fattening stable and after slaughter. The proportion of lean meat was determined at slaughter.

1. Clinical and economical results

- The One- Shot vaccine gained better results than the Two- Shot vaccine and the placebo concerning weight gain in the farrowing period. Especially animals with a questionable health status could take profit out of the One- Shot vaccine.
- In the fattening period the animals vaccinated once were coughing more frequently than the animals vaccinated twice or the controls. Coughing at the end of the fattening period could be associated with position of the farrowing pen in the stable implicating the influence of climatic conditions and bad health of the lungs and low weight at slaughter.
- At slaughter neither the One- Shot- nor the Two- Shot vaccine had delivered an economical advantage.

2. Immunological results

- In the present study the One- Shot vaccine did not lead to an increased production of antibodies against *M. hyo*, whilst the conventional vaccination increased the antibody-titer 4 weeks after booster in some of the animals. This rise in antibodies did not show any correlation with clinical- economical parameters.
- A field infection with M. hyo probably occurred around 3 to 7 weeks before slaughter.
- The high titer at the end of the fattening period was negatively associated with lung health and carcass weight
- The proportion of B- cells was low at 8 and 12 weeks of age in all groups
- The vaccinated animals showed a course of CD4+/CD8+ T-cell-ratio different from the control group, there was no variation between the two vaccinated groups. The difference of the control group originated in a lower proportion of CD8+ T- cells as well as a higher proportion of CD4+ T- cells at an age of 12 and 25 weeks. Here as well, there were no correlations with clinical- economical parameters.

In this herd the One- Shot vaccine could not lead to economical improvements compared to the Two- Shot vaccine. The Two- Shot vaccine could also not surpass the control. The possible reasons for a vaccine failure in this herd were discussed.
The results of the immunological tests show that seroconversion after vaccination is missing. The high antibody- titers at the end of the farrowing period rather support the idea of an acute infection with a *M. hyo* field strain approximately 3- 7 weeks before slaughter. A small effect on proportions of cell populations could be observed at the time of infection.