# HEMOPHILUS PLEUROPNEUMONIA BACTERIN FIELD TRIALS IN AN ENDEMICALLY AFFECTED HERD

S. C. HENRY, D.V.M.* and T. A. MARSTELLER, D.V.M.
ABILENE ANIMAL HOSPITAL, P. A.
320 N.E. 14TH, ABILENE, KANSAS U.S.A.

Two field trials compared groups of unvaccinated control pigs with three groups of pigs vaccinated with different H. pleuropneumonia bacterins. Losses preceding vaccine trials were 18% in 8 to 30 week old animals on this farm. Trial goals were to evaluate the effect of these bacterins on death loss, rate of gain, complement fixation titers, morbidity and economic impact.

Pigs in Trial 1 were farrowed in winter and were maintained as a single group of 600 through 8 weeks of age. At seven to nine weeks of age pigs were inoculated with either Bacterin A or B or were identified as controls. Pigs were comingled during the trial. Trial 2 pigs were farrowed in summer and, at seven and nine weeks of age, innoculated with Bacterins A or C, identified and controls selected. Pigs in Trial 2 were also comingled during the course of the trial.

Bacterin A was made from analgous bacterial strains (Types 1 and 5), was from cultures less than 12 hours old and was adjuvanted with oil. Bacterin B was an autogenous bacterin prepared from strains isolated from the herd, also adjuvanted with oil, but from cultures greater than 12 hours old. Bacterin C was prepared as A except that an aqueous adjuvant was utilized. Post vaccinal reactions were limited to a few granulomas forming at injection sites when oil adjuvanted products were used.

Death Loss Summary:

| | Trial 1 | | Trial 2 | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Controls | 17/107 | 15.9% | 4/49 | 8.2% |
| Bacterin A | 4/168 | 2.4% | 3/99 | 3.0% |
| Bacterin B | 9/131 | 6.9% | --- | --- |
| Bacterin C | --- | --- | 5/100 | 5.0% |

Rate of Gain Summary:

| | Trial 1 | | | Trial 2 | | |
|---|---|---|---|---|---|---|
| | Ave Wt, Lbs | Age, Days | Wt/ Day | Ave Wt, Lbs | Age, Days | Wt/ Day |
| Controls | 187.3 | 205 | 0.91 | 197.7 | 206 | 0.96 |
| Bacterin A | 191.2 | 205 | 0.93 | 204.0 | 209 | 0.98 |
| Bacterin B | 193.2 | 205 | 0.94 | --- | --- | --- |
| Bacterin C | --- | --- | --- | 194.1 | 207 | 0.94 |

Morbidity:

Only pigs from Trial 1 were available for post slaughter inspection. Presence of fibrous scarring, fibrous pleural adhesions and walled off abscesses were considered evidence of healing from earlier clinical pleuropneumonia. Sixty one percent of unvaccinated controls, 54 percent of Bacterin A group pigs and 61 percent of Bacterin B group pigs had postmortem lesions suggesting pulmonary disease due to H. pleuropneumonia.

Complement Fixation Titers:

Trial 1, by head tested (*PV - Post Vaccination)

| | Controls | | | Bacterin A | | | Bacterin B | | |
|---|---|---|---|---|---|---|---|---|---|
| | *PV 2wks | PV 6wks | PV 12wks | PV 2wks | PV 6wks | PV 12wks | PV 2wks | PV 6wks | PV 12wk |
| Negative | 10 | 10 | 10 | 0 | 0 | 3 | 8 | 12 | 6 |
| 1:4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1:8 | 3 | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 1 |
| 1:16 | 2 | 0 | 0 | 0 | 2 | 4 | 2 | 1 | 1 |
| 1:32 | 1 | 2 | 0 | 0 | 2 | 1 | 4 | 1 | 1 |
| 1:64 | 3 | 2 | 0 | 2 | 1 | 1 | 0 | 1 | 0 |
| 1:128 | 0 | 5 | 0 | 18 | 14 | 0 | 3 | 4 | 1 |
| No Test | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

Trial 2, by head tested (*Pre Vacc - Pre Vaccination)

| | Controls | | | Bacterin A | | | Bacterin B | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Pre Vacc | PV 6wks | PV 12wks | Pre Vacc | PV 6wks | PV 12wks | Pre Vacc | PV 6wks | PV 12wk |
| Negative | 15 | 18 | 0 | 14 | 2 | 0 | 14 | 9 | 1 |
| 1:4 | 2 | 0 | 0 | 1 | 0 | 0 | 4 | 1 | 0 |
| 1:8 | 3 | 0 | 1 | 3 | 0 | 0 | 2 | 0 | 1 |
| 1:16 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 1 |
| 1:32 | 0 | 0 | 5 | 0 | 0 | 2 | 0 | 2 | 3 |
| 1:64 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 1 | 0 |
| 1:128 | 0 | 2 | 1 | 0 | 13 | 6 | 0 | 3 | 2 |
| No Test | 0 | 0 | 8 | 2 | 0 | 9 | 0 | 0 | 10 |
| Total | 20 | 20 | 17 | 20 | 20 | 18 | 20 | 18 | 18 |

Economic Impact:

Net value per pig was calculated by comparing death loss and weight differences of Bacterin groups to the performance of unvaccinated controls. In Trial 1 Bacterin A had a value of +7.60 $ U.S. and Bacterin B resulted in a +6.35 $ U.S. value. Trial 2 again supported the economic values of Bacterin A, +4.65 $ U.S., while Bacterin C was not greatly different than controls at -1.30 $ U.S.

Conclusions:

1) Oil adjuvanted, young culture bacterins were most effective in reducing death losses.

2) Limited observations suggested that morbidity is not significantly decreased by vaccination.

3) Rate of gain is slightly improved in groups of pigs vaccinated with oil adjuvanted bacterins.

4) The level of complement fixation antibodies at 6 weeks post vaccination suggested this test may be somewhat useful as a predictor of vaccine efficacy. Vaccines unable to produce uniformly high titers were associated with performance poorer than those able to produce high C.F. titers.

5) Bacterins prepared from young cultures and administered in oil adjuvant were economically beneficial in this herd.