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Prevention of respiratory disease in weaning calves

Abstract

Respiratory diseases of weanling calves are a continuous problem for ranchers. Each case is estimated to represent a $10 to $20 loss through veterinary costs, decreased gains, and death losses. There is also some question as to the effectiveness of certain preventative treatments. Few reliable experiments have compared medicative and management procedures of disease preventions. We evaluated preweaning vaccinations and weaning management practices.

Keywords

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Prevention of Respiratory Disease In Weaning Calves[1]

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Respiratory diseases of weanling calves are a continuous problem for ranchers. Each case is estimated to represent a $10 to $20 loss through veterinary costs, decreased gains, and death losses. There is also some question as to the effectiveness of certain preventative treatments. Few reliable experiments have compared medicative and management procedures of disease preventions. We evaluated preweaning vaccinations and weaning management practices.

Methods and Materials

Both four weeks and two weeks before being weaned, 52 calves were vaccinated with pasteurized bovine rhinotracheitis-parainfluenza^{-3}. A modified live bovine rhinotracheitis-parainfluenza^{-3} vaccine was used on another group of 42 calves two weeks before weaning. Sixty-two calves received no vaccine. At weaning the 156 Polled Hereford calves were divided into three management groups. Thirty were weaned in a double fenced pen in the pasture where they were raised, to eliminate transportation stress. The remaining calves were trucked approximately six miles and divided into two lots with one lot receiving water and the other an electrolite mixture. The calves were fed to consumption twice each day prairie hay and a mixture of 60% dry rolled sorghum grain and 40% dehydrated alfalfa crumbles.

Weights were taken in the pastures at weaning and at weekly intervals for three weeks. Rectal temperatures were obtained every other day during the first week postweaning and at two weeks postweaning.

Calves with temperatures of 104°F. or over were treated, as were those determined by the herdsman to be clinically sick.

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Sick animals were routinely treated with 10cc of Pen-Strep. Chronic cases were treated with Terramycin or Sulfa compounds.

Temperature and weight data were analyzed, using least squares analysis with weaning weight and weaning age as covariants to hold those two variables constant. Age of the dam and sex of the calf were included in the analysis. Chi-square analysis was used to analyze for differences in number of calves treated in the various groups.

Results

Table 43 gives performance results as interactions between weaning management and vaccination treatments were not significant ($P>.05$), only main factors are presented. Weaning stress did not increase temperature in general. Calves had either a normal temperature or a highly elevated temperature, above 104°F, so differences in average temperatures between weaning management or vaccination treatments were not significant. Significantly more ($P<.025$) calves that received the modified live vaccine were treated than those that received the pasteurized vaccine. Number of sick calves in the nonvaccinated group was intermediate. Weaning management accounted for no significant differences in number of sick calves, but the group with the largest percentage sick was the one weaned in the pasture. Calves weaned in the pasture required fewer treatments per sick calf than those in other management groups. Calves that received the pasteurized vaccine also required fewer treatments per sick calf than the nonvaccinated group or the group vaccinated with the modified live vaccine.

The average weaning weight was 395±5.8 lbs. All groups lost weight during the first week with no significant differences. At the end of the second week, all groups except those weaned in the pasture had again reached their approximate weaning weights. The group weaned in the pasture lost weight throughout the three week trial. At the end of three weeks differences in weight among the groups vaccinated were not significant but both vaccinated groups weighed slightly more than the nonvaccinated group. Groups that received either electrolite or water continued to weigh significantly more than the group weaned in the pasture.

Discussion

Each of the past two years serious outbreaks of respiratory diseases have followed weaning in this herd. This year inclement weather persisted with precipitation 10 of the first 12 days. Maximum daily temperature ranged between 43° and 80°F.; minimum, between 19° to 61°F. No shelter was provided during the weaning period. Past history of the herd and severe weather should have stressed the calves enough to challenge their health. Under the conditions described the percentage of sick calves was lower for those vaccinated with pasteurized bovine rhinotracheites-parainfluenza^{-3} vaccine than for those not vaccinated or those vaccinated with a modified live vaccine.

Calves weaned in the pasture separated from their mothers by a double fence lost weight while those trucked 6 miles gained weight after the first week. Fewer calves that received electrolyte became sick and they required fewer treatments per sick calf than was true for calves that received water.

Table 43. Average calf performance (with standard errors) of calves receiving indicated weaning treatment.

Variable	Vaccination treatment			Weaning management		
				Truck		
	None	Killed	Live	Electrolite	Water	Pasture
No. calves	62	52	42	63	63	30
Temperature, F.						
2nd day	101.2±0.1	101.3±0.1	100.8±0.2	101.2±0.1	101.3±0.1	100.8±0.1
4th day	102.1±0.2	102.0±0.2	101.6±0.3	101.5±0.2	101.9±0.2	102.3±0.2
6th day	101.4±0.2	101.5±0.2	101.7±0.3	101.3±0.2	101.9±0.2	101.3±0.2
14th day	101.6±0.2	101.6±0.2	101.7±0.3	101.8±0.2	101.7±0.2	101.3±0.2
Weight, lbs.						
7th day	377.8±4.7	385.9±4.1	386.5±7.3	379.7±5.0	388.3±5.1	382.1±4.9
14th day	383.0±4.1	394.2±3.5	390.1±6.3	394.8±4.3	396.7±4.4	375.9±4.2
21th day	386.7±4.5	396.1±3.8	397.7±6.9	407.0±4.7	404.3±4.8	369.3±4.6
Treatments						
Calves treated	32%	12%	45%	25%	29%	37%
Treatment/calf treated	2.50	1.67	2.32	2.06	2.90	1.64