Effect of receiving weight on predicted days to onset of respiratory disease in feedlot steers.

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Data were collected to determine the relationship between receiving weight and predicted days until the onset of respiratory disease (PDTS). Crossbred steers (n=1,551) from a single source were shipped from western Nebraska to southeast Colorado. Cattle from 3 ranch units were received in shipments occurring over 3 separate days. Steers were housed overnight in feedlot receiving pens before being processed and allocated to their pens. In some cases, initial processing did not occur until the second day after arrival due to time limitations. Steers were weighed during initial processing and housed in pens until identified as sick by feedlot personnel. Sick animals were treated according to approved protocols and assigned to sick pens until time of recovery. Only animals identified as afflicted with bovine respiratory disease (n=675) were included; ($\bar{x}=16.52$, $\sigma=9.94$). Animals not identified as sick (n=879) were given a constant variable (250 d) as their PDTS representing the predicted days in the feedlot. Alternatively, only observations on sick animals could have been included. Therefore the total data set (n=1,551) had an average PDTS ($\bar{x}=148.49$) and a standard deviation (s=115.98). Animals identified as sick for other reasons were not included. A mixed effects model was used to analyze the data with SAS PROC MIXED. Ranch unit (n=3)-processing day combinations (n=5), and pen (n=6) were included as fixed class variables. Random effects were animal within ranch unit-feedlot pen. Receiving weight was included in the model as a covariate. Receiving weight and ranch-lot classes had significant effects on PDTS ($P<0.001$ and $P<0.05$ respectively). Therefore as receiving weight increased 0.33 ± 0.142 kg the PDTS was expected to increase by one day. These results indicate that heavier cattle are less susceptible to bovine respiratory disease due to processing stress than calves that enter feedlots at lighter weights.

Key Words: Beef Cattle, Bovine Respiratory Disease, Receiving Weigh