



Prevalence, clinical signs, and hematologic parameters of bovine hemotropic mycoplasma infection on a Missouri dairy



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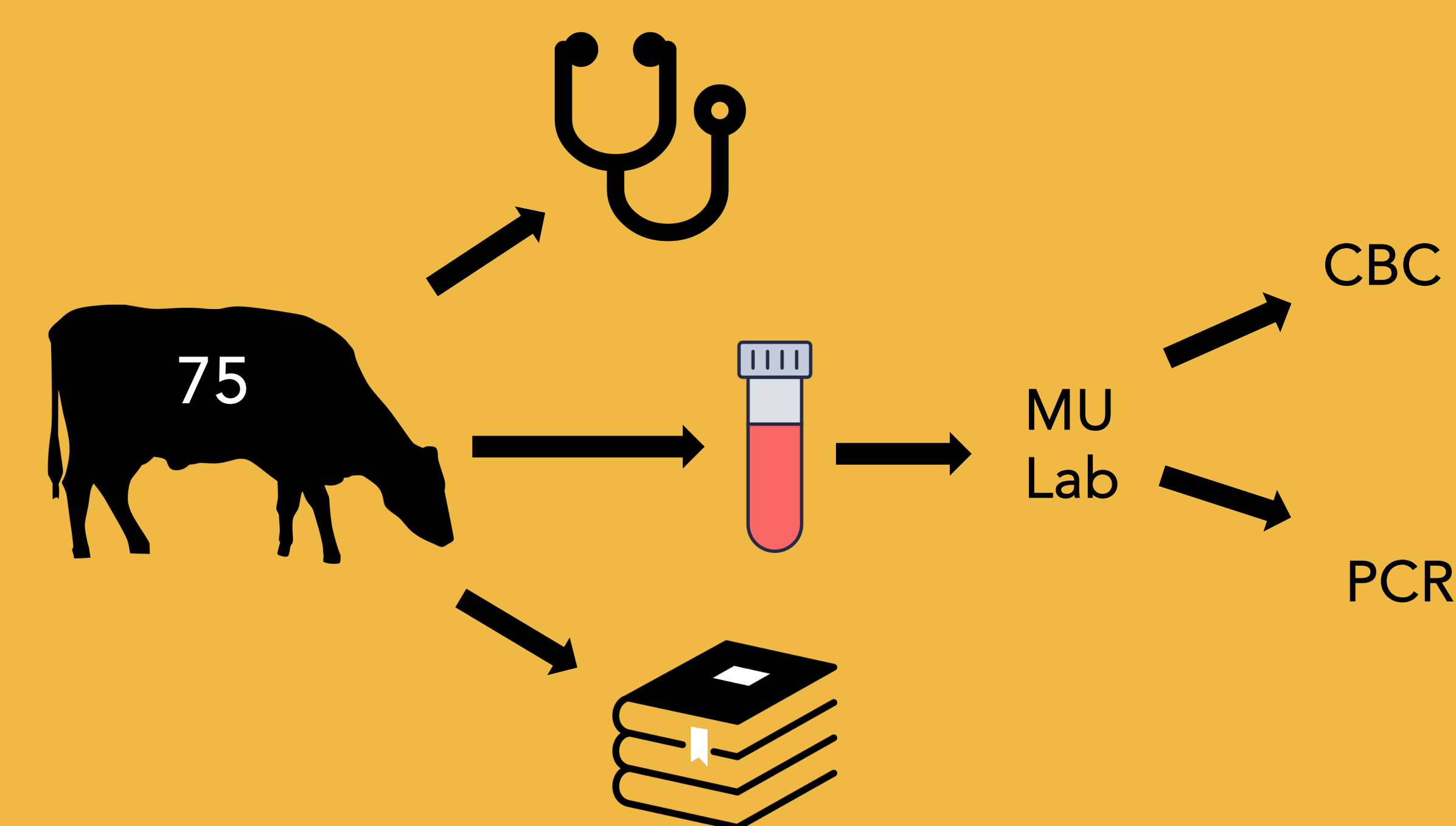
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Background

Hemotropic mycoplasmas (HM) are unculturable, gram-negative, obligate epierythrocytic bacteria that infect a variety of species worldwide. There are two main species known to infect cattle: *Mycoplasma wenyonii* and *Candidatus Mycoplasma haemobos*. Infection with one of these or co-infection can result in clinical signs including anemia, hindlimb edema and stiffness, udder edema, and lymphadenopathy; however, subclinical infections are most commonly documented. These infections can also lead to a drop in milk production, but there is a lack of consensus on clinical signs and production consequences following infection.

Methods

75 first lactation fresh heifers were enrolled in this study from a single dairy within 7 days of calving. Full physical examinations were performed, and blood was collected for hemotropic mycoplasma PCR and Complete Blood Count (CBC) at enrollment. Blood was collected via coccygeal vessels using 3 mL EDTA sample tubes and cooled immediately to 4°C for transport to the University of Missouri. All animals were also tested for *Anaplasma marginale* by PCR and were negative. Production data, including survival within the herd, milk yield for first 30 days of lactation, and development of other diseases during the duration of the study, was collected and examined for those animals that had that data available (n=60). All data was entered and managed in Microsoft Excel.



Milk Production Results

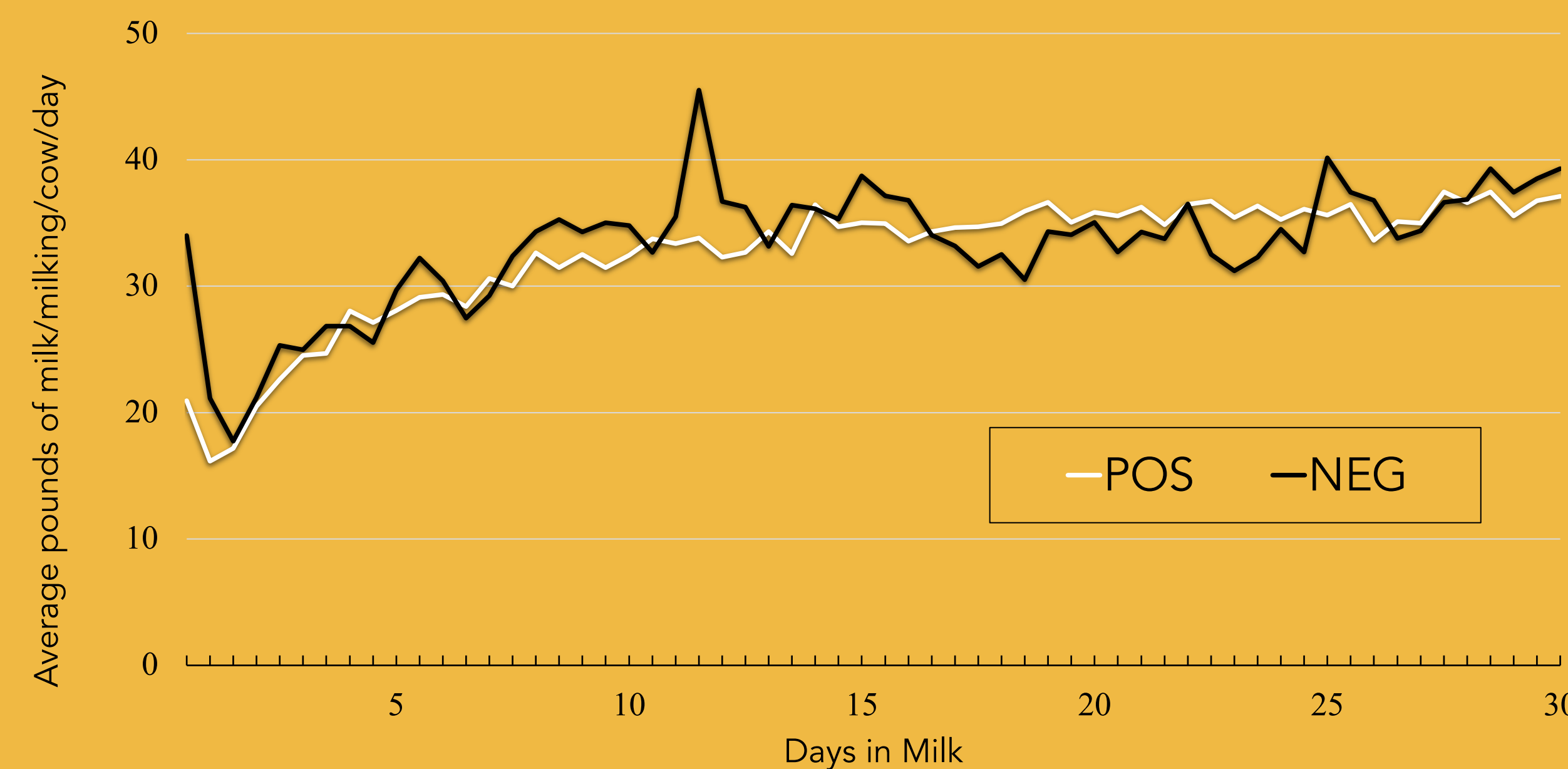


Figure 1: Average pounds of milk produced per milking per animal per day for the first 30 days of lactation in hemotropic mycoplasma PCR positive (n=62, 82.7%) versus negative animals (n=13, 17.3%).

Physical Exam Results

HM PCR Results	Total cows	Removed from herd*	Enlarged lymph nodes	Stiff Gait	Edema [†]	Other Dz [‡]
POS	62 (82.7%)	20 (26.7%)	46 (61.3%)	12 (16%)	30 (40%)	37 (49.3%)
NEG	13 (17.3%)	5 (6.7%)	10 (13.3%)	2 (2.7%)	4 (5.3%)	8 (10.7%)
TOTAL	75	25 (33.3%)	56 (74.7%)	14 (18.7%)	34 (45.3%)	45 (60%)

* - Culled, euthanized, or died
[†] - Ventral, udder, and/or peripheral limb edema
[‡] - Additional diseases include diagnosis of one or more of the following: metritis, mastitis, displaced abomasum, and/or ketosis

Table 1: Physical exam results at enrollment and incidence of additional disease diagnoses at enrollment or within the first 30 days of lactation in hemotropic mycoplasma PCR positive (n=62, 82.7%) versus negative animals (n=13, 17.3%).

Hematologic Results

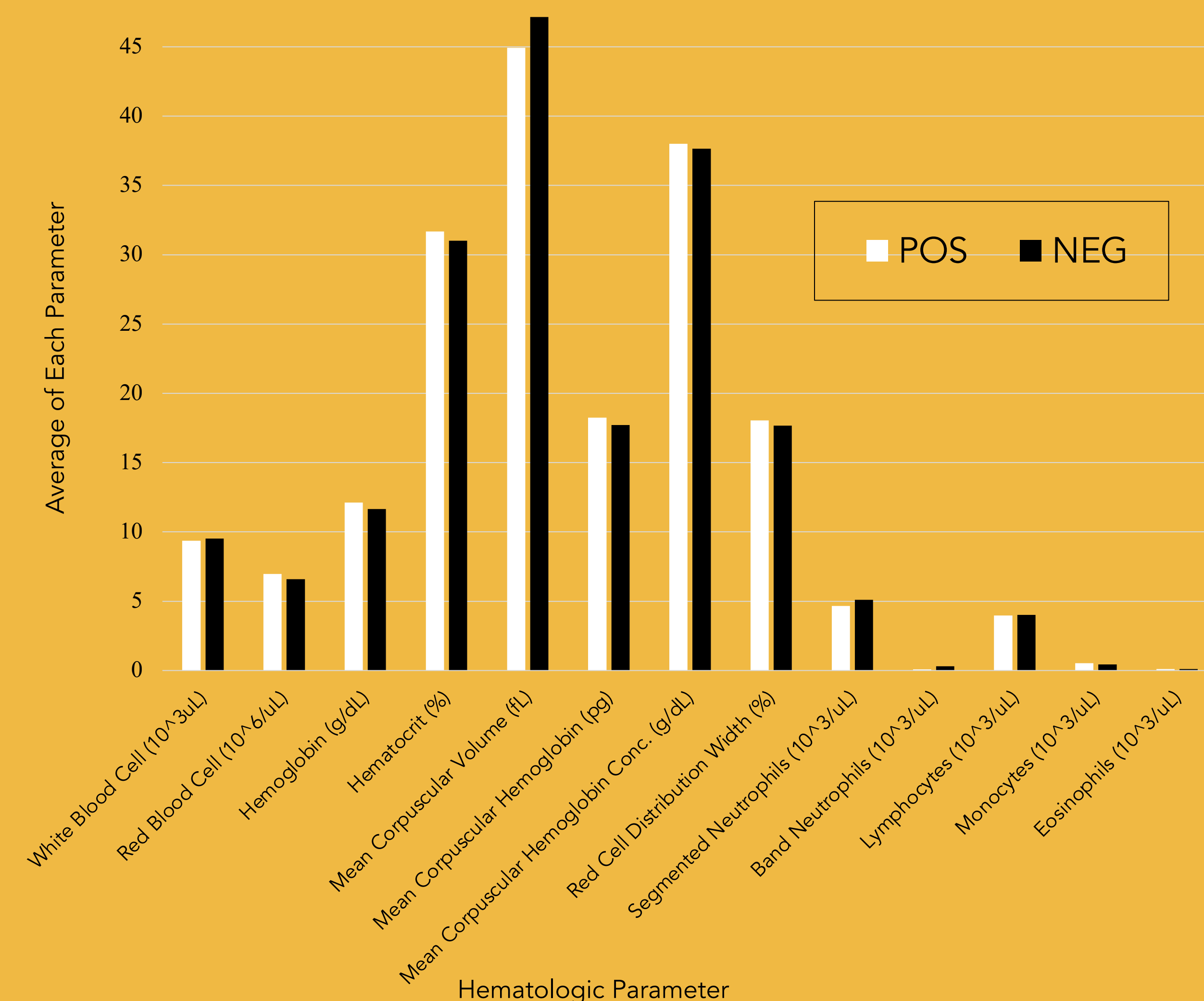


Figure 2: Average value of complete blood count (CBC) parameters in hemotropic mycoplasma PCR positive (n=62, 82.7%) versus negative animals (n=13, 17.3%).

Results

62 out of 75 (82.9%) sampled cows tested PCR positive for hemotropic mycoplasma. Milk production data and CBC data were similar for both hemotropic mycoplasma PCR positive and negative cows (Figures 1 & 2). Lymphadenopathy (46/75, 61.3%), stiff gait (12/75, 16%), and udder, ventral, and/or hindlimb edema (30/75, 40%) had higher incidence in the hemotropic mycoplasma PCR positive group (Table 1).

Conclusion

We expected to find proof that hemotropic mycoplasmas are prevalent in a Missouri Dairy herd and that these infections contribute to abnormal hematologic findings, can manifest clinically, and result in production losses. Our data supports a high prevalence of hemotropic mycoplasma in this herd but does not support differences in hematologic findings or milk production between hemotropic mycoplasma PCR positive versus negative animals (Figures 1 & 2). These findings are consistent with other herd studies published on these infections across the world. The data did show, however, that there were more positive cows than negative cows that exhibited the clinical signs associated with these infections (Table 1). Limitations for this study are the use of only one herd of dairy cattle from one state and the small sample size of the negative group. These may have contributed to a higher number of positive samples proportionally and make global application of these results challenging. By conducting this study, we have provided preliminary data, in hopes of conducting larger studies to further understand bovine hemotropic mycoplasmas and their significance.

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