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57 Impact of Cache Valley Virus in an Arkansas sheep flock. Joan M. Burke[1], Erin Wood[2], Charles Lee[2], Ann Carpenter[3], Noah Kojima[3], Anna Fagre[3], Amanda Calvert[3], Elisa Thrasher[3], Stacey Martin[3], Erin Staples[3], Carolyn Gould[3], [1]*USDA, ARS, Dale Bumpers Small Farms Research Center,* [2]*USDA, ARS,* [3]*CDC*

Abstracts: Cache Valley Virus (CVV) is an arbovirus transmitted between mosquitos and several vertebrate species, including small ruminants. Infections in adult sheep and goats is generally subclinical, but infection during pregnancy is a growing animal welfare issue as it can result in embryo or pregnancy loss, fetal malformation, and dystocia. Diagnosis in fetal tissue or neonates is made using serologic or molecular testing. Serologic diagnosis in the dam can indicate past infection but does not confirm CVV infection in the fetus. ARS first noted clinical signs of possible CVV during the Nov/Dec 2015 lambing; first seropositive dam was identified in Jan 2021. To estimate incidence of CVV infections among ewes bred from 2019-2023 and lambing in Jan/Feb (n = 185), adverse pregnancy outcome such as embryo loss, birth of dead, deformed, or weak lambs, were used as surrogate markers. The relationship of animal BW (ewes at breeding and post-breeding; lambs at birth and ~60 d of age), dam age, lamb outcome, and breeding year were compared by likely CVV infection status. To estimate seroprevalence in ewes and correlate serology results with pregnancy outcomes, serum was collected from ewes (n = 46) exposed to rams in Aug 2022 at 0 (first day of ram exposure) and ~60 d later. Tissue from aborted or dead lambs and serum from live lambs exhibiting signs of CVV (swollen joints, parrot mouth, deformities) were collected. Serum was screened for neutralizing antibodies using a CVV-specific plaque reduction neutralization test using a 50% cut-off (PRNT50). For this preliminary analysis, specimens with PRNT50 antibody titers ≥ 10 were considered positive. Tissue specimens were tested using bunyavirus and CVV RT-PCR. Data were analyzed by GLM (SAS). Using surrogate markers, an estimate of incidence of CVV during pregnancy was 26.5 ± 2.9% without year differences (P = 0.16) or age (yearling vs older ewes, P = 0.44). There was no association between CVV and dam BW (P > 0.10), number of live+dead lambs born, but CVV possibly reduced number of live lambs by 18% (P = 0.02) and those weaned by 27% (P = 0.002). Live litter birth (CVV, P < 0.001) and weaning BW (CVV × year, P = 0.04) were reduced by CVV. Of 42 ewes bred in Aug 2022, 9 (21%) had a positive titer in Aug (pre-pregnancy) indicating possible past infection,

3 (11%) seroconverted in Oct, indicating possible infection during pregnancy. Of those, 2 (6.7%) had adverse pregnancy outcomes, including one stillbirth with deformities that had a positive RT-PCR on kidney tissue. Further studies are needed to determine whether CVV is becoming more widely prevalent in small ruminants, as are new technologies for early detection and prevention.

Keywords: arbovirus, Cache Valley Virus, animal welfare