United States Department of Agriculture

Research, Education, and Economics
Agricultural Research Service

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Dr. Kristin M. Haas
President
United States Animal Health Association
4221 Mitchell Avenue
St. Joseph, Missouri 64507

Dear Dr. Haas:

Thank you for your letter of November 19, 2018, in which you discussed United States Animal Health Association (USAHA) resolutions 24, 25, 28, and 31 that were approved at the recent USAHA annual meeting. The resolutions discuss the need for expanded research to control and eradicate transmissible spongiform encephalopathies (TSEs) such as chronic wasting disease (CWD), scrapie, and brucellosis. I have included some information below about work at the Agricultural Research Service (ARS) on these three important animal diseases.

As you know, CWD is a relatively uncharacterized TSE with novel patterns of transmission and agent distribution, and it is a challenge to control it in captive cervids and free-ranging wildlife. CWD in North America has also resulted in concerns from the public health community, although there is no evidence that this prion disease is zoonotic. There also are substantial costs associated with surveillance of hunter-killed animals. ARS scientists and colleagues at Colorado State University and U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS) Veterinary Services and Wildlife Services, documented the first association between Prnp codon 132 genotype and incubation time in elk with experimental CWD. This study characterized the disease phenotype and demonstrated that there were no differences in the eventual outcome of the disease, only in the incubation period. This information will be useful for producers and regulatory groups to establish minimum quarantine periods and elk movement requirements and providing guidance to investigators performing pathogenesis trials.

Historically, a single diagnosis of scrapie results in permanent quarantine or euthanasia of all goats and sheep on a farm. Sheep have acquired genetic resistance to scrapie through ARS breeding efforts and this has supported scrapie eradication efforts by the sheep industry, but goats do not exhibit the same genetic resistance. This recently changed with the discovery of two naturally occurring prion gene alleles in goats that have shown exceptional promise for conferring disease resistance. ARS scientists in Pullman, Washington, and scientists in other laboratories around the world have shown that even one copy of either of these genes confers strong resistance to classical scrapie in goats. Although the USDA National Scrapie Eradication Program has not yet formally recognized these alleles, USDA is planning pilot genetic-based

cleanup plans for goats that are similar to programs used in sheep. Scrapie resistance should significantly enhance goat breeding programs and goat health; in addition, breeding scrapie-resistant goats will benefit all small ruminant producers by reducing scrapie in the United States and supporting efforts to designate the import-export status of the United States as a scrapie-free country.

ARS contributed to the development of the RB51 brucellosis vaccine for cattle and evaluated its use in bison. Results indicated single or booster vaccination was effective in preventing abortion or organism shedding at parturition, a key time for spreading disease, and booster vaccination provides the best protection. The protection induced by a single RB51 vaccine of bison was not equivalent to the protection observed in vaccinated cattle. A key finding is that multiple vaccinations of calves within 1 year do not improve protection.

ARS scientists have also identified a potential *Brucella suis* vaccine strain for swine and confirmed the vaccine is clinically safe, effective, and does not induce antibodies detectable in brucellosis surveillance tests, which is critical to differentiate infected from vaccinated animals. The vaccine has been shown to be effective when administered either parenterally or orally and may be beneficial under field conditions for reducing the prevalence of brucellosis in swine populations. Research is ongoing in assessing potential oral vaccine candidates.

ARS will continue to work with APHIS, other Federal and State partners, and stakeholders to find ways to control and eradicate TSEs and brucellosis. Thank you for taking the time to share your thoughts about these important issues. We look forward to continuing our work with USAHA and other organizations to protect and promote U.S. livestock health and production.

Sincerely,

Chavonda Jacobs-Young

CHAVONDA JACOBS-YOUNG
Administrator