The Bill Kunkle Interdisciplinary Beef Symposium entitled “Tall Fescue Toxicosis Update” was held at the annual meeting of the Southern Section of ASAS on Monday, February 2, 2015, in Atlanta, GA. The purpose of the symposium was to present up-to-date information regarding fescue toxicosis in beef cattle and new information regarding metabolism of ergot alkaloids, as well as to provide an environment for discussion of years of research focusing on how to reduce the negative effects of this syndrome and improve genetic resistance to it. The symposium was comprised of 5 invited presentations, which are briefly discussed below.

The symposium began with an invited presentation by R. L. Kallenbach (University of Missouri, Columbia, MO) entitled “Coping with tall fescue toxicosis: Solutions and realities”. During his presentation, Kallenbach gave an overview of the current status of the possible alternatives to reduce the effect of fescue toxicosis in beef cattle and new information regarding metabolism of ergot alkaloids, as well as to provide an environment for discussion of years of research focusing on how to reduce the negative effects of this syndrome and improve genetic resistance to it. The symposium was comprised of 5 invited presentations, which are briefly discussed below.

The second speaker was M. S. Gadberry (University of Arkansas, Little Rock, AR) who summarized the research data that focused on reducing the negative impact of fescue toxicosis on animal production. In his presentation “Research efforts aimed at reducing the impact of fescue toxicosis on economically important production measures for beef cattle”, Gadberry conducted a meta-analysis of published literature based on treatment hypothesized to improve animal performance or reduce the production losses associated with grazing endophyte-infected tall fescue (Gadberry et al., 2015). The production per animal, per unit of land (hectare), and DMI were the economically important traits under evaluation. Results were presented grouped into 3 strategies: 1) applied with forage systems, 2) based on pharmacological compounds and functional foods, and 3) based on supplemental dietary nutrients.

Trent Smith (Mississippi State University, Mississippi State, MS) was the third speaker who presented the talk titled “Genetic resistance to the effects of grazing endophyte-infected tall fescue”. He reviewed the published data concerning the differences between cattle breeds, research conducted using mice as a model, and the identification of genetic markers and other traits and their relationship to fescue toxicosis (Smith and Cassady, 2015). Data reviewed on the difference between breeds (i.e., Hereford and Angus) did not show conclusive results. When comparing genetic lines of mice fed an endophyte-infected diet, the resistant line of mice produced more pups and they weighed more at weaning than the susceptible line, which had also a smaller mature weight. Similarly, the resistant line had greater activity of 2 detoxifying enzymes present in the liver; glutathione-S-transferase and uridine diphosphate glucuronosyl-transferase. The incorporation of Bos indicus or the use of tropically-adapted
Bos taurus breeds such as Senepol and Romosinuano reduced, in most cases, the negative effects of consuming toxic fescue on different production variables when compared with purebred British breeds (i.e., Hereford, Angus). Besides the identification of genes associated with prolactin production, it was also reported that an easy way for producers to identify animals susceptible to fescue toxicosis is the type of hair coat, with rough hair been present in animals negatively affected by endophytes due to retention of winter coat.

J. L. Klotz (USDA-ARS, Forage-Animal Production Research Unit, Lexington, KY) was the fourth presenter of the symposium and discussed how ruminants process ergot alkaloids. Klotz’s presentation “Physiologic effects of ergot alkaloids: What happens when excretion does not equal absorption?” indicated that there is a conversion of ergovaline to lysergic acid in the ruminant animal, with incomplete elimination (excretion) of all the alkaloids that are consumed (Klotz, 2015). The fate of these metabolites might be redistribution to different tissues, as well as deposition of some ergot alkaloids in specific tissues with gradual excretion over time. While transformation of toxins in the rumen and following absorption in the body are poorly understood, the recent work presented represents the first steps toward elucidating the possible fate of these alkaloids and their metabolites, although more research is needed.

The final presentation, “Does ergot alkaloids negatively impact bull semen quality and fertility?” was made by S. L. Pratt (Clemson University, Clemson, SC) who discussed how these compounds affect reproductive production in bulls through indirectly decreasing the release of prolactin or directly affecting neurotransmitter receptors. Pratt remarked that only 6 studies to assess bull growth and semen quality have been published between 2004 and 2015 (Pratt and Andrae, 2015), which may affect the conclusions taken based on the effect of some factors such as temperature, heat index, toxin levels, forage quality, breed differences, and different bulls’ age at the time of the experiment.

The Interdisciplinary Beef Symposium held at the Southern Section ASAS Meeting continues to be well attended and to contribute to the quality of the meeting. The renaming of the symposium in 2014 as the “Bill Kunkle Interdisciplinary Beef Symposium” honors the contributions of a valued colleague and also brings additional recognition and support to this important function.

LITERATURE CITED