UNIT - FORAGES

Lesson 9: Fescue Toxicity

TEACHING PROCEDURES

A. Review

Review the previous lessons.

B. Motivation

Ask the students if they have livestock that graze on fescue pastures. Determine how much fescue is used for feed in your general locality. With the wide use of fescue as a forage in Missouri, any toxicity problems with its use will be wide-spread.

C. Assignment

D. Supervised Study

E. Discussion

1. Ask the students to discuss incidents of fescue toxicity they have encountered or heard about.

What are the problems caused by fescue toxicity?

1) Summer slump or summer syndrome (low animal performance in summer)
2) Fescue foot (non-infectious disease)
3) Fat necrosis (areas of hard fat)
4) Agalactia (little or no milk)

2. Have the students list the symptoms of fescue toxicity. Discuss the importance of recognizing symptoms for treatment. Discuss preventive measures and treatment of sick livestock. (HO 7)

What are the symptoms of fescue toxicity?

1) Summer slump or summer syndrome
   a) Cause: endophyte fungus (acremonium coenophalum)
      (NOTE: This is the only fescue toxicity problem that has positive association with a cause - fungus.)
      (1) Fungus is seed-borne and is spread by the seeds.
      (2) Plants do not become infected by adjoining plants.
      (3) There is little evidence that the fungus is transmitted by carriers.
      (4) Fungus grows within the intercellular spaces of the plant.
      (5) Fungus cannot be detected until plants are four to six weeks old.
b) Conditions
   (1) High air temperatures (exceeding 80°F) are associated with summer.
   (2) Endophyte infects fields of fescue.
   (3) Toxicity can be found in hay after three years of storage.

c) List of symptoms
   (1) Rough hair coats
   (2) High rectal temperatures
   (3) Poor performance
   (4) Panting
   (5) Low feed intake
   (6) Excessive salivation
   (7) Low prolactin levels which cause lowered production
   (8) Animals seeking shade and liking to stand in water and mud

2) Fescue foot
   a) Cause not known
   b) Conditions
      (1) Fall regrowth
      (2) Accumulation of fescue
      (3) Lameness usually appearing at onset of cold weather (below 60°F)
      (4) Cattle in poor condition more susceptible
   c) Symptoms
      (1) Early symptoms
         (a) Arching of the back
         (b) Roughened hair coat
         (c) Soreness in one or both rear limbs
         (d) Shifting from one foot to the other in young cattle
         (e) Symptoms more noticeable in early morning
         (f) Slight to severe loosening of the stool
      (2) Intermediate symptoms
         (a) Reddening of skin and swelling at the junction of the hoof and dew claw
         (b) Lameness becoming more pronounced
         (c) Symptoms at end of tail similar to those at hoof and dew claw
         (d) Sloughing of ear tips
         (e) Body tremors
      (3) Advanced symptoms
         (a) Marked swelling above the hoof
         (b) Dead tissue line below dew claws (loss of dew claws)
         (c) Dead tissue line at coronary band (loss of fleshy portion)
      (d) Emancipation

d) Treatment
   (1) Removal of animals as soon as lameness is seen
   (2) Marketing of animals showing permanent injury
3) Fat necrosis
   a) No conclusive evidence about causes at this time
   b) Symptoms
      (1) Weight loss
      (2) Listless
      (3) Loss of appetite
      (4) Increase in hair coat roughness
      (5) Loss of internal body functions
   c) Economic impact due primarily to loss in performance
4) Agalactia
   a) No conclusive evidence about cause at this time
   b) Symptoms - lack of milk production

3. Ask students if they have observed fescue toxicity problems in their area and what they have done about them.

What are the management control practices for each fescue toxicity problem?

1) Summer slump or summer syndrome
   a) Destroy infected fields and reseed.
      (1) Destroy fields with a history of toxicity.
      (2) The use of non-selective herbicides is successful.
      (3) Re-establish fescue with no-till or conventional methods.
   b) Develop a grazing system.
      (1) Use other forages besides fescue.
      (2) Avoid fescue grazing during summer months.
      (3) Only graze on fescue pastures for about a week at a time, and then on other pastures for two weeks.
   c) Incorporate legumes into fescue.
      (1) Graze those fields intensely early in the season to reduce grass growth and allow legumes to become dominant.
      (2) This has a positive dilution effect.
   d) Avoid grazing mature fescue.
      (1) Fungus is more concentrated in the seed head.
      (2) Clip off seed heads with rotary mower.
   e) Feed infected fescue during cooler times of year.
   f) Avoid making hay from infected fields if possible.
      (1) Infected hay still reduces performance even if fed during winter.
      (2) There is an accumulation effect which may make livestock more susceptible in spring.
   g) Determine the severity of the problem in a pasture program.
      (1) Economic threshold is somewhere between 20 percent and 40 percent infection.
      (2) New seed should contain less than 5 percent infection.
   h) Seed
      (1) Choose varieties free of fungus.
      (2) Age seed at least two years.
      (3) Treat seed with chemicals or heat.
i) Test for the fungus.
   (1) Obtain seed samples from several places in seed lot.
   (2) Send a 2-ounce composite to testing center.
   (3) Take plant tissue samples from stem, leaf sheath (up to ligule), spikelet, and seed head.

2) Fescue foot
   a) Pasture management
      (1) Mixing of fescue with legumes
      (2) Rotational grazing
      (3) Removal of all vegetative growth once a year
      (4) Recommendation of no more than 200 pounds of nitrogen per acre a year
      (5) Severe toxins follow conditions of severe summer drought and limited fall rains.
      (6) Feeding of hay to animals on pasture
   b) Cattle management
      (1) Observe daily for lameness.
      (2) Grain supplementation reduces symptoms.

3) Fat necrosis and aglactia - Use management practices which are similar to those for fescue foot and summer slump.

F. Other Activities

Have students take seed and plant samples from fields determined to have fescue toxicity. Send these samples to the Livestock Nutrition Laboratory (P.O. Box 1653, Columbia, MO 65205).

2. Students may wish to investigate new sprays which have been developed to combat fescue toxicity problems. (One possible source of such information is the Ralston-Purina Company.)

G. Competency

Describe the symptoms and management control practices for fescue toxicity.

H. Answers to Evaluation

1. Answers shall include, but are not limited to the following:
   a. Summer slump or syndrome - low animal performance in summer or when air temperatures are above 80°F
   b. Fescue foot - a noninfectious disease that manifests itself in the deterioration of extremities (legs, ears, tails)
   c. Fat necrosis - areas of hard fat that form internally in animals, causing loss of internal body functions
   d. Agalactia - loss or complete stoppage of milk production in livestock

2. F
3. T
4. T
5. F
6. F
7. T
8. Use HO 7 ("Fescue Toxicity Symptoms") as an answer key.