



# Cattle Producer's Handbook

## Animal Health Section

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# Health Concerns with Feeding Grass-Seed Straw Residues

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The largest production cost facing livestock producers in the Pacific Northwest is providing supplemental winter-feed to their cattle. One potential avenue to decrease winter-feed costs involves the use of grass-seed straw. In Oregon, over 500,000 tons of grass-seed straw are produced on an annual basis and, at \$35 to \$60 per ton delivered to the ranch, this is a competitive feed resource for wintering beef cows.

One of the primary factors limiting the use of grass-seed residues is the tremendous variation in nutritive quality of the straw. This variation can be because of grass species, grass variety, fertilization, harvesting technique, and/or weather conditions during harvesting. Although there is limited information available, the species of grass-seed straw that appear to have the most potential as a livestock feed (in terms of nutritive quality and quantity available) include bluegrass, tall fescue, perennial ryegrass, and bentgrass.

Some grass-seed residues, however, have anti-quality factors associated with them that are important for livestock producers to be aware of when planning to use a grass-seed residue as an alternative feed source. The information presented will help cattle producers make sound nutritional decisions concerning the use of grass-seed residues as a winter-feed resource.

### Endophyte and Grass-Seed Straw

The endophytes that affect grass-seed straw are fungi that live in symbiotic relationship with the grass plant. The grass plant is a "host" for the fungus that provides it with the necessary nutrients to survive while the fungus allows the grass plant to be more disease and insect resistant and more tolerant of grazing and drought.

The problem with the fungi arises from the alkaloids that they produce. The two primary grass-seed straws that can contain significant levels of these alkaloids are tall fescue and perennial ryegrass. The fungus that is found

in tall fescue is called *Neotyphodium coenophialum*, and the fungus found in perennial ryegrass is called *Neotyphodium lolii*. The primary alkaloids produced by these fungi are ergovaline and lolitrem B for *Neotyphodium coenophialum* and *Neotyphodium lolii*, respectively.

The presence of these endophytes and their respective alkaloids in pasture and harvested grass-seed straw presents a problem to cattle, sheep, and horses ingesting them. It should be noted that perennial ryegrass can also contain elevated levels of ergovaline, therefore, perennial ryegrass has the potential to cause problems associated with both ergovaline and lolitrem B.

### Type and Variety of Grass-Seed Residue

The type of grass-seed residue can affect the alkaloid concentration. The most common types of grass-seed residues are straw and seed screenings. These can be economical feed resources for the cattle producer. However, seed screenings have a much greater probability of containing high levels of alkaloids than straw. This is because alkaloids are concentrated in the reproductive parts of the grass plant, especially the seedheads.

Contrary to some opinions, endophyte toxicity is not reduced by pelleting. Therefore, livestock producers should not feed seed screenings unless these grass-seed residues have been tested for alkaloids and/or are guaranteed to be endophyte free.

The variety of a grass-seed residue can also affect alkaloid concentration. In general, the turf varieties have a much higher alkaloid concentration than the forage varieties. The turf varieties are developed to have high endophyte concentrations so that the plants have increased growth, increased drought tolerance, and increased resistance to certain insects—qualities for which turf plant breeders select.