Grass for Forage, Biomass, or Bedding

Perennial grass is being seriously considered as a biomass crop. Primary biomass uses are direct combustion or conversion of plant cellulose and other sugar-based compounds to ethanol (“cellulosic ethanol”). Some perennial grass species will have to be considered “dedicated” biomass and not a dairy forage source, but all species may have multiple uses on a dairy farm. Ideal composition of grass for biomass is essentially the opposite of that for dairy forage. Biomass should be as high as possible in fiber content and as low as possible in CP.

High producing grasses such as reed canarygrass or switchgrass can be sown for biomass production, or an existing mixture of grass species can be utilized. Animal manure can be spread in the spring or after harvest to increase productivity. Forage is cut when mature, ideally leaving it subject to rainfall on the field, to allow leaching out of nutrients that will otherwise end up as undesirable ash. Baling at normal hay crop moisture allows stable storage of feedstock until densification.

The Biomass Crop Assistance Program (BCAP) has been operated by the USDA Farm Service
Agency since 2009 to provide incentives for farmers to establish and cultivate biomass crops. Producers can receive annual payments for herbaceous biomass for up to five years, as long as they sell the biomass to an FSA-approved biomass processor.

**Multiple Uses of Grass**
If warm-season grasses such as switchgrass or big bluestem are sown for biomass, their only other alternative use is for bedding. The forage is unsuitable for dairy cows or even heifers. Cool-season grasses can be managed for lactating or dry cow forage, or biomass or bedding. There is one exception, if reed canarygrass cultivars with high alkaloid content are developed for high-yielding biomass, they will not be suitable for livestock forage.

There is one major concern for using grass or straw pellets for horse bedding. It is very unhealthy for horses to eat their bedding, the bedding must be seen as unpalatable. Horses will eat oat straw pellet bedding. Some pelleting operations in Europe mix lavender with pelleted biomass to ensure the material is unpalatable bedding for horses. Pelleted bedding is likely not cost-effective for most dairy farms.

**Summary**
Grass biomass production does not need to compete with production of feed and forage on dairy farms. Grass biomass fields can provide a site for distribution of animal manure. Grass that cannot be harvested for forage in a timely fashion may be utilized to provide a portion of the heat energy needed on the farm.

**Grass for Bedding**
Poorly drained fields in the Northeast are often seen as good candidates for reed canarygrass establishment. Reed canarygrass can tolerate extended flooding, but it cannot solve a drainage problem. This means soils can be waterlogged at the optimum harvest stage. One solution is to let the grass mature and harvest it for bedding. Dairy quality forage can be obtained in a regrowth cutting.

Bedding is also considered an alternative use for pelleted grass. Pelleted grass and straw can be ideal for horse bedding, particularly in more urbanized areas. Pelleted material is very absorbent, and permits selective removal of waste-contaminated bedding. Pelleted biomass sold by the bag for bedding is considerably more valuable than the energy value of the grass for combustion. Pelleted wheat straw is readily available in NY for horse bedding.

**Additional Resources**

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