

# Native Grass Harvest: Best Management Practices for Quality Harvest Intended for Combustion Purposes

## Introduction

Native grasses such as Switchgrass (*Panicum virgatum*), Big Bluestem (*Andropogon gerardi*), and Indiangrass (*Sorghastum nutans*) are increasingly being utilized as feedstock for renewable energy projects. As producers plant and manage these grasses for a wide variety of applications, proper harvest management is critical to ensure that the feedstock produced is able to be processed or utilized as intended. Material that is not properly taken care of post harvest may lose value or become unusable for its intended purpose. This document is intended to outline some of the details during and after harvest that should be considered to maintain quality of harvested material.



## Harvest timing

Harvest of native grasses for combustion purposes differs slightly from harvest intended for conversion to liquid fuels or other biomass use. The quality of the biomass material can be improved by weathering the material overwinter to reduce the inorganic fraction of the material by exposing it to precipitation in the field allowing leaching of water soluble components out of the material. This leaching period also allows for nearly complete air drying of the material before harvest. Generally speaking, delaying harvest until at least the first of February or later will give the material sufficient time to leach and dry before harvest. This means that this opportunity to harvest is generally best when the ground is frozen and free of snow and ice. If fields have high percentages of Big Bluestem and Indiangrass that tends to lodge early in the winter, this material can be cut and left in the field in windrows to be baled at a much later date. This cutting should still be delayed until four to six weeks after a killing frost to allow for adequate translocation of nutrients to the roots systems in order to maintain the grasses future productivity and stand longevity.

## Cutting Height

A residual stubble height of 8 inches is recommended for a few very important reasons. One important reason is that stubble left at 8 inches will have less of a tendency to puncture tires during harvest



operations. The longer stubble will bend or fold over as the tires pass over them, while short stubble is rigid and can puncture even heavy duty tires. Additionally, maintaining a cutting height of 8 inches will mean that there is less of a chance to pick up rocks or other debris at ground level. Rocks can pose a serious threat to processing and combustion equipment. If raking of windrows is needed at any time, care should be taken to ensure that the rake teeth do not come in contact with the ground which could result in

rocks and soil contaminating the material. Leaving crowns at a height of 8 inches will also help to maintain healthy stands as it allows the plants to retain nutrients and energy stores for following year growth.

### **Bale Storage**

Bales that are able to be stored inside should be transported directly to storage after harvest to avoid picking up moisture, road dust, or other contaminants. In this way material can be stored for many months without compromising quality. This becomes very important when the material is to be densified before use, as this process is very sensitive to moisture fluctuations.



Bales that must be stored outside should be stored on pallets, dry ground, or gravel pads. If storage is on gravel, care must be taken to inspect for this gravel sticking or frozen to the bale after it is picked up. Covering these bales with tarps will reduce storage losses greatly. Net wrap sheds water much more effectively than conventional twine and can reduce the surface area that comes in contact with the ground further reducing storage losses. Bales stored uncovered in the open weather can expect significant fluctuations in moisture content and overall quality. Uncovered bales can experience as much as 40% loss of usable biomass.

