

AN EVALUATION OF BROWSE SILAGE PRODUCTION AS A FEED COMPONENT FOR ZOO HERBIVORES.

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ABSTRACT

Browse is an essential part of many zoo animals' diet. Our prevailing temperate climate in Southern Ontario makes it impossible to provide enough fresh browse year round. Therefore browse is preserved by ensiling. In this research we compared harvest time, nutrient content and time of preservation. Apple (*Malus domestica*) was used as the sole browse plant species. Leaves, stems and immature fruits were pruned off and placed in 30L polyethylene drums, packed and compressed with the self-designed and constructed browse press. A total of 62 drums, with an average weight of 16kg, were made from June to August 2010. Samples were taken after an average ensiling period of 206 days and frozen at -20C until analysis. Yeast colonies grew in 41% of the barrels. Apple browse silage averaged a pH of 4.88 and contained 58.4% Moisture with 7.6% crude protein, 44.9% neutral detergent fiber, 36.3% acid detergent fiber, 29.7% lignin, 2.6% starch, 1.46% calcium, 0.13% phosphorus, 43.38% non-fiber carbohydrates, 2.06% fat and 6.33% ash in dry matter. The nutritional values obtained from our analyses are generally comparable to those on browse in the literature. The apple browse silage was readily eaten by every animal it was offered to and in many cases picked over their regular diets. The experience gained with our ensiling technique was a worthwhile experience. However, when compared to willow, ensiling apple browse took us 4-5 times longer. In hopes of making this ensiling process more efficient we planted a dedicated browse plantation, with 10,000 willow and poplar trees for future silage production.