Forage Conservation in the Caribbean

In St. Kitts and Nevis, as in many Caribbean islands, one of the major factors limiting productivity of small ruminants is poor nutrition due to a shortage of good quality forages, particularly during the dry season. Natural pastures cannot support the desired productivity of sheep and goats. Cultivated and well maintained pastures or forage banks are required with the aim of improving the dry matter and nutrient yield of forages available on the farm.

Technologies aimed at transferring a high production of forage during the wet season towards the dry season must also be developed. Harvesting for hay is sometimes not possible and one option for conservation is ensilage.

Other crops, such as grain sorghum or forage sorghum (Sorghum bicolor; Fig. 2), which are drought tolerant yet high yielding, have been investigated as silage crops and found to be suitable.

For successful ensiling, the raw material needs to contain around 30% dry matter, have a high concentration of sugars at cutting (water soluble carbohydrates), and air must not be allowed to enter the system after compaction and sealing.
Ensiling method: silage bag
The forage was harvested (Fig. 3) and filled into plastic bags (drum liners: 8 mil thick; Fig. 4).

The forage packing was done by stomping on the forage inside the drum (Fig. 5), and the final compaction was done using a mechanical compactor (Fig. 6).

The end of the bag was twisted tightly to remove all air inside the bag and the closure secured with strong twist ties (Fig. 7 and 8).

The split drum used as a ‘mould’ was then opened (Fig. 9). The size of the bag was 0.6m diameter at the base and 1.2m tall for sorghum (Fig. 10) and 0.6 m tall, for the Mulato II (Fig. 11).

Storage
The transportation and storage process requires extreme caution to avoid puncturing the silage bags. A gravel base covered with a thin layer of agricultural lime (calcium carbonate) will keep the base dry and deter rodents.

Silage bags should be stacked in a pyramid shape to a height of no more than 3 layers and covered with a tarpaulin (Fig. 12) to avoid penetration of sunlight and condensation inside the bags.

Conclusions
Both forage species, Forage Sorghum and Mulato II, proved to be successfully conserved using the silage technique, with optimal pH (4.2) obtained during 6 months of storage.