

# SCALED MECHANISATION OF FORAGE PRODUCTION AND HARVESTING

## Level 1

Topic	Training & information Content
1.1	Planning of fodder/feed requirements for the dry season
1.2.1	Integrated soil fertility management I
1.2.2	Integrated soil fertility management II
1.3	Use of natural resources, compost making, farmyard manure, manure storage and use
1.4	Growing maize and sorghum for fodder and estimating time of harvest and yield
1.5	Brachiaria, Panicum, & Napier (cut and carry) grass management
1.6	Growing fodder trees and use of feed
1.7	Estimating of dry matter content, feeding value and yield of various fodder crops
1.8	Guidelines for Tropical pasture management and grazing management
1.9	Scaled mechanization of forage production and harvesting (harvesting practices)
1.10	Operating farm equipment and self-propelled tractors
1.11	Mechanization of feeding management
1.12	Economics of forage and pasture production



## 1. You will learn about (learning objectives):

- ❑ How to harvest different forage crops based on forage species, grazing and mechanization





## 2. Grazing

- Grazing is the most common practice in South Western Ugandan farms
- It is a cheap way to feed cows
- Mixed grass legume pastures are more productive and nutritious
- Rotational grazing with paddocks(fence) is most recommended





### 3. Mechanical harvesting of Grass and Forage crops for silage

- Whole plant silage is made from crops such as Maize/oats/sorghum, best harvested at dough ripe stage
- Napier grass is best harvested at 60-90 cm (knee high)
- Pasture grass at 17-30 cm
  - harvest 2-3 inches/5cm above the ground for fast regrowth
  - pre-dry the grass (wilt) for up to 10-30 hours depending on day's temperature, wind & sunshine



## 4. Cut and carry Grasses

- Harvest cut and carry grasses such as Napier, Brachiaria and Panicum grasses at the right stage for cows get the most nutrients out of the forage





## 4.1 Cut and carry Grasses: Napier grass

- Harvest when between 60-90cm high
- During the growing season harvest at intervals of 6-8 weeks
- Harvest the grass following a pattern;
  - Day 1: begin at one end of the row and cut enough grass to feed your cows for 1 day
  - Day 2: cut the next grass within one row
  - Day 3: carry on until you reach the end of the row





## 4.2 Cut and carry Grasses: Alfalfa and Desmodium

- Leguminous forage such as alfalfa and desmodium are best wilted before given to cows in large volumes



Fresh Lucerne

Fresh Desmodium



Wilt first  
before  
feeding

## 5. Conserved feed – best additives?

- Good and cheap additives



- **Time:** to allow wilting (drying)
- **Wind (speed):** allows to dry faster
- **Sun:** more sun helps to dry faster

- Bad and costly additive



- **Rain:** will make valuable nutrients leach from the grass





## 6. Tools for cutting grass

- Manual tools



Slasher



Scythe



Sickle



Panga

## 6.1 Tools for cutting grass Cont'd...

- Mechanical tools



Lawn mower



1 and 2 drum Mower



Grass brush cutter



Tractor (mounted) mower



## 7. Hay making

- The objective of mechanizing haymaking is to produce a stable, high-quality animal feed with minimum expenditure



## 7.1 Hay making: High yield (many bales) does not equal good quality

- Hay is not as nutritious as fresh forage grazed by animals. It is harvested and stored which requires manual labour and machinery
- Utilizing surplus forage pastures during peak growing times for use as feed during the dry season is wise if the forage is harvested wisely and stored properly





## 7.2 Hay making: Mowing the grass

- Mow during dry weather conditions to allow the grass wilt. This can be done using a sickle, scythe or tractor driven (2 drum) mower. A stubble height of 5 cm should be maintained to facilitate faster regrowth



## 7.3 Hay making: Turning/tedding

- This allows air and sun in contact with the lower surfaces to allow drying
- For smaller plots the grass can be turned manually with a hay fork
- Tractor mounted tedders use the principle of rotation. In the pictures alongside the tractors are mounted with drum tedder and a rotary tedder





## 7.4 Hay making: Tools for turning hay

- Hay fork(s) can be used to turn grass/hay manually while and mechanical rake(s) can be mounted behind a tractor

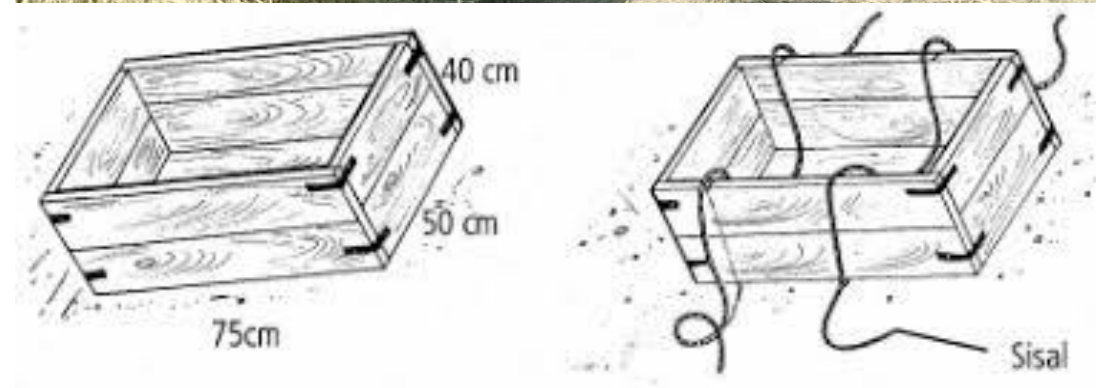


Hay tedders



## 7.5 Hay making: Baling

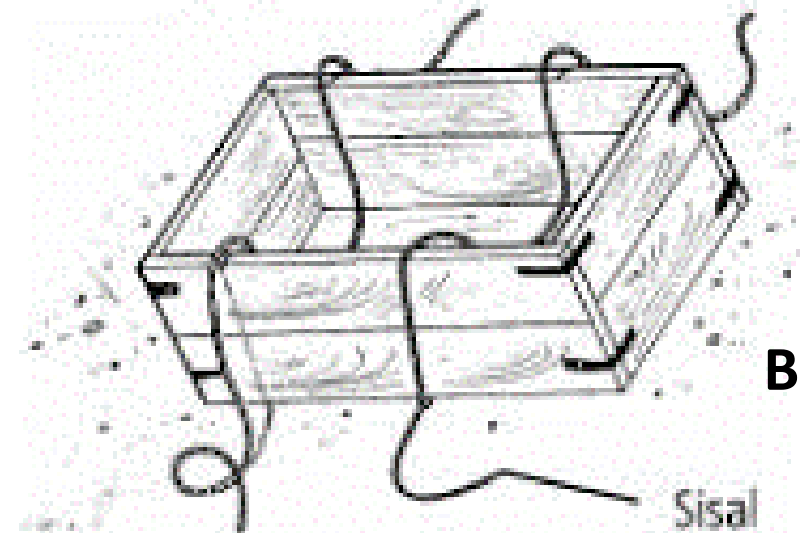
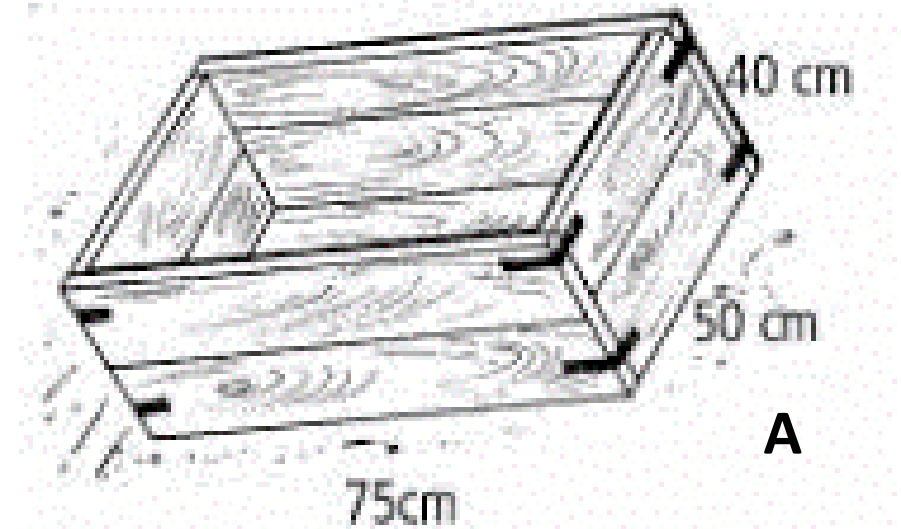
- The grass is then picked up, compressed and formed into rectangular or cylindrical bales and bound together by a string
- Small holdings can use a wooden frame (75 cm x 50 cm x 40 cm), put 2 strings (as shown in the picture) and compact manually





## 7.6 Hay making: Making a baling box

- What you need;
  - Wood
  - Nails
  - Plane
  - Hammer
  - Strings
- Procedure;
  1. Plane the wood
  2. Assemble the wood with nails as shown in **figure A**
  3. Leave the upper part open
  4. Put the strings as shown in **figure B** and allow them to hang outside
  5. Put the grass into the box and compact
  6. Keep piling the grass while compacting by feet
  7. Fasten the strings
  8. Lift the baler



## 8. Silage: Maize Silage – Mechanization

- The machine should have preferably a kernel crusher. This will allow to cut the forage maize crops at dough ripe or ripe stage
- The machine needs proper preventive maintenance and daily service during harvesting (e.g., calibration and sharpening of knives)





## 8.1 Maize Silage – Pit location

- Determine how far the clamp/pit is from the barn, how well-drained the location is, how safe it is from any traffic and from birds, rodents and wild animals
- Ensure that the pit is close to the animals to ease the feed out

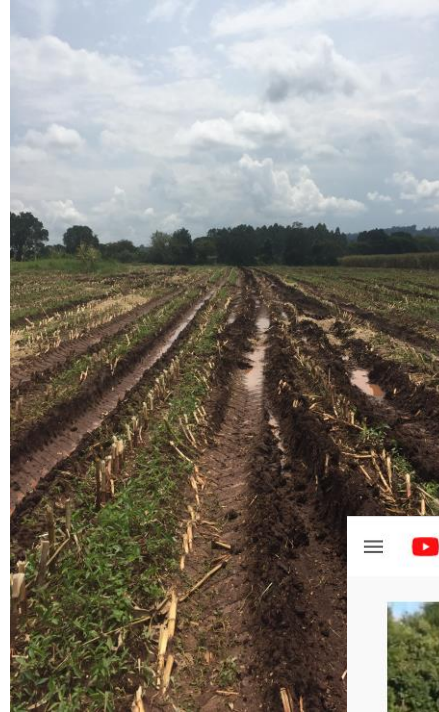


## 8.2 Maize Silage – Check the weather before harvesting

- Check the weather if appropriate for machines to enter the field and right for harvesting
- Install weather forecast application on a smart phone as this can give an indication of how the weather for one week is

Watch video:

<https://www.youtube.com/watch?v=XGzUL9tRelc&t=117s>



YouTube <sup>KE</sup> making hand-made hay bales with a box baler



Making hand-made hay bales with a box baler

875,916 views · Jul 11, 2016

6.7K 507 SHARE SAVE ...

Paul LS

SUBSCRIBE

The image shows a YouTube video player interface. At the top, there is a search bar with the text "making hand-made hay bales with a box baler". Below the search bar is a video thumbnail showing a person operating a box baler in a field. The video title is "Making hand-made hay bales with a box baler". Below the title, it shows "875,916 views · Jul 11, 2016". There are also icons for likes (6.7K), comments (507), share, save, and a menu icon. At the bottom left, there is a channel name "Paul LS" and a "SUBSCRIBE" button.