



# ANIMALS IN THE AGROECOLOGICAL SYSTEM

# ESSENTIAL ANIMALS IN THE AGROECOLOGICAL SYSTEM

- The usefulness of animals in the agroecological farm is multiple.
  - Valorization of biomass (hedges, green manure, crop biomass) into food products (eggs, milk, meat and others) and manure
  - Recycle many nutrients, transforming them rapidly into a form that can be assimilated by plants (manure, slurry)
  - The non-use of animals makes it difficult for the system to function in a closed circuit (without external fertilizer)
  - Pest and weed control
- The number one goal of livestock production in the agroecological system is not necessarily animal production!
  - Rather extensive production: animals are fed mainly with fodder that is not edible for humans

# RUMINANT NUTRITION

- Ruminants (sheep, goats, cattle) have the ability to digest roughage: grass, legume biomass, crop biomass, hay, etc.
- In the agroecological farm, they can be fed with:
  - biomasses of hedges (moringa, leguminous trees and others)
  - biomass from green manures (stylosanthes, desmodium, brachiaria, eleusine, pennisetum)
  - biomass of associated crops (pennisetum, desmodium)
  - biomass of crops (sweet potato, bean/ cowpea/soybean)
  - by grazing.

# RUMINANT NUTRITION

3 ways to give them roughage:

1. The "cut and carry": the biomass is mowed and brought fresh to the ruminants.
2. Haying: the fodder is cut, dried and stored
3. Grazing: the animals help themselves to the living plants

# THE 'CUT AND CARRY'

“Cut and carry”: the biomass is mowed and brought fresh to the ruminants.

- Quality fodder
- Allows the animals to be kept in the barn during feeding, and therefore easier to collect the excrement
- Almost mandatory to feed the animals with the biomass of the hedges and associated crops, as grazing would cause damage to the main crops
- High workload
- Need to mix grass and legume biomass



# HAY



- Drying roughage to preserve it for feeding animals in the dry season.
- It is necessary to use young biomass rich in nitrogen: grasses, desmodium, eleusine, perennial groundnut, young branches or leaves of leguminous trees.
- Stylosanthes or sweet potato biomass cannot be made into hay, as animals do not consume it.
- Mow the biomass and let it dry for 2 to 3 days in the sun.
- The hay can be harvested and stored as soon as it is completely dry.
- Wet hay: risk of rotting and fire.

# SILAGE

Silage consists of fermentating grass/fodder to increase its digestability and energy content.

Way to store fodder in dry season.

Ideally, half-dried grass must be mixed with urea and sugarcane molasses.

Alternatives can be used (fruit waste, urine), currently tested at Eladale.

Maize can be turned to silage as well.

# GRAZING

Grazing consists of letting ruminants graze. It can be practiced on large areas of fallow land.

- Low workload
- Difficult to control what the animals eat
- Risk to animals (poisoning, snake attacks, theft)
- Risk of loss of biodiversity and soil denudation



# ROTATIONAL GRAZING

- Beware, overgrazing will denude the soil and expose it to erosion, while decreasing biodiversity.
- Alternatively, rotational grazing can be practiced on small plots
  - Sow a quality mixture, let it grow
  - Separate the grazing area into small patches
  - Send animals to graze on one paddock at a time
  - Move animals to the next paddock before plants are killed
  - Mow
  - Do not send animals back until the plants have grown back sufficiently

This avoids overgrazing, as well as selective grazing



# FORAGE BALANCE

- Essential balance between
  - Legumes (proteins)
  - Grasses (carbohydrates, fiber)
- An unbalanced forage will cause digestion and health problems for the animal. Forage that is too high in energy and too low in fiber (legume grains and corn grains) can even cause the death of a ruminant by acidification of its stomachs.
- **A balanced forage contains between 50 and 70% grass and between 30 and 50% legumes**
- BEWARE OF DIET CHANGES
- Hay → grazing at the beginning of the rainy season

# CONTROL OF GASTRIC PARASITES

- Acacia (ideally *A. raddiana*, *A. nilotica* and *A. karoo*) and moringa leaves have shown potential to combat gastric parasites (helminths, nematodes) of goats and sheep



# POULTRY

- Valorize kitchen and crop waste/peelings, dry bread, spoiled fruit etc.
- Chickens can be sent to a plot of land after the harvest. They will eat the remains of unharvested crops (peanuts, cereals, vegetables), turn the soil, fertilize it and deworm it.

The ducks can be sent into the crops at any time. They will eat the pests without damaging the crops.

# POULTRY

- Poultry are sent with ruminants to grazing plots.
- They will feed on insects while hunting
- Poultry nutrition is supplemented with cereal grains (corn, eleusine, sorghum) and legumes (pigeon peas, leguminous trees, cowpeas).
- Legume grains should be lightly cooked to limit their toxicity.

QUESTIONS ?

