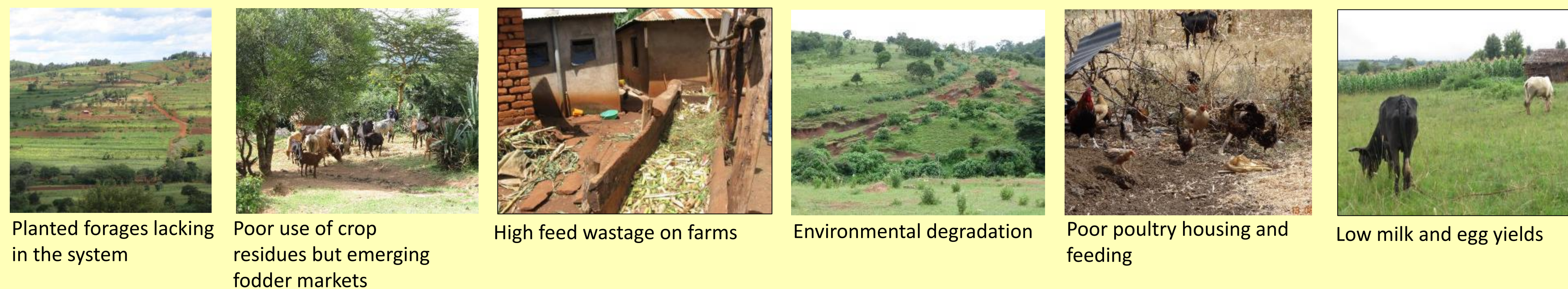


# Integrated Livestock Feed

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## Key problems and opportunities



Planted forages lacking in the system

Poor use of crop residues but emerging fodder markets

High feed wastage on farms

Environmental degradation

Poor poultry housing and feeding

Low milk and egg yields

## Cluster of interventions

### 1. Introduce improved high yielding forages

#### Objectives and approach

- (i) To evaluate suitability and productivity of forages in different AEZs
- (ii) To assess impacts of forages on water and nutrient fluxes through leaching and runoff to water ways.

Research approach/method:

- In 2013, on station screening and testing of forages. In 2014-2015, on farm testing of 'best bet' forages.
- Measurements of soil moisture using a Diviner 2000 Probe Series within Napier grass accessions.

#### Key achievements

- At least one Napier grass (*Pennisetum purpureum*) accession was outstanding in each agro ecological zone which gives farmers options to choose from.
- Established 24 bulking sites for 'best bet' forages to supply planting materials to farmers.
- Developed and produced an extension brief on management, processing and use of forages English and Kiswahili.

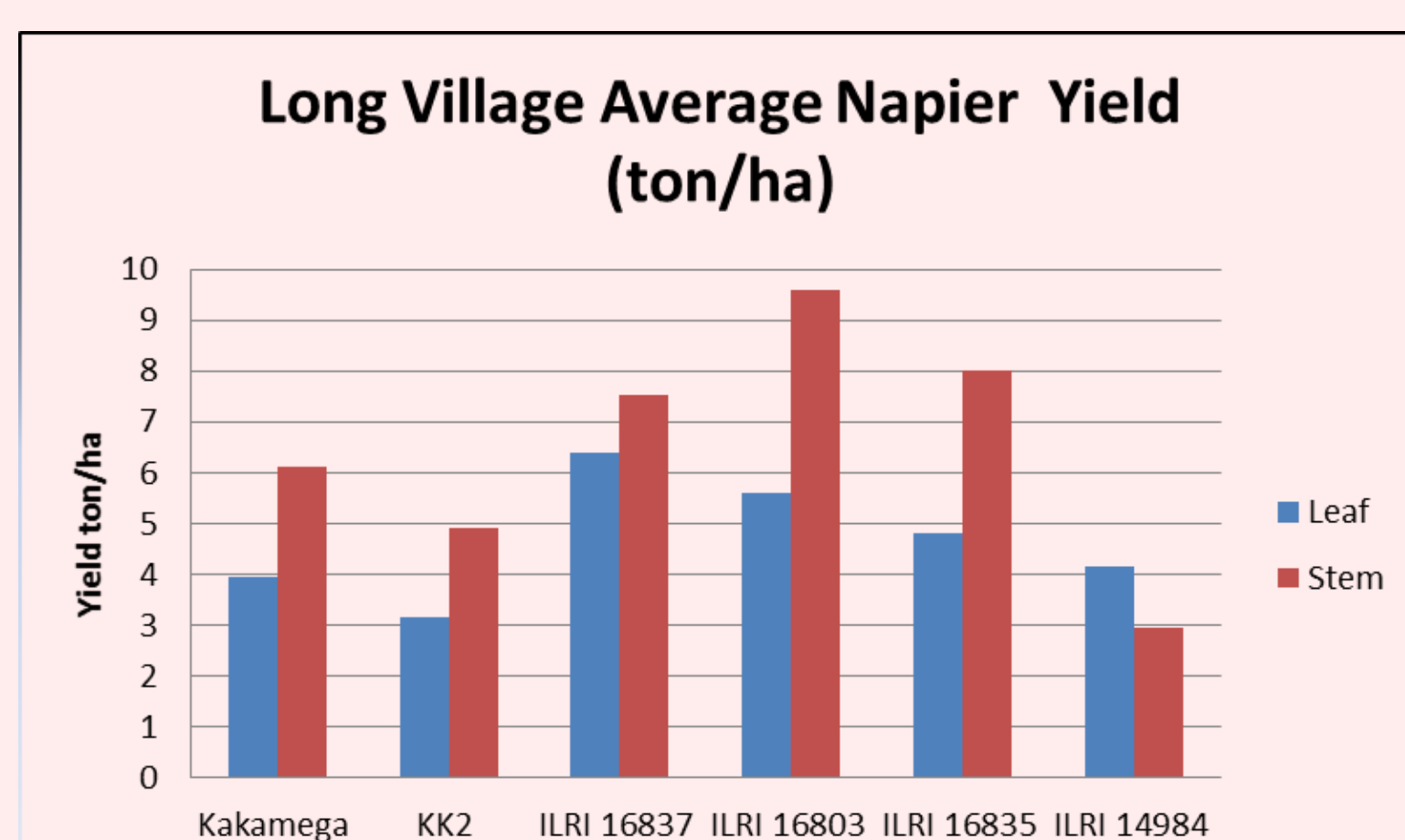


Figure 1: Performance of forages in Long Village



A Napier grass plot in Babati



A Desmodium green leaf plot in Babati

### 2. Feed processing & ration formulation for cattle

#### Objectives and approach

- (i) To enhance storage, processing and use of crop residues as an intensification strategy in mixed farming systems.

Research approach/method:

- Introduced six (6) forage choppers through farmers groups in each village.
- A longitudinal study (i) to document current crop residue feeding practices and (ii) quantified the effect of chopping and mixing of crop residues and forages on intake, feed wastage and milk production
- Tested impact of crop residues based feed rations on milk production.

#### Key results

- Crop residue and forage chopping reduces feed wastage by 53%.
- Intake of mixed feed (rations) was 93% compared to intake of 40% from feed chopped using a machete (panga).
- Machine chopping reduced the time required to process dry stover, bean haulms and Napier grass manually by ¼, ½, and a third respectively.
- 8 rations formulated targeting cows producing 10, 15 or 20 litres of milk/day



Figure 3: A crop residue based ration

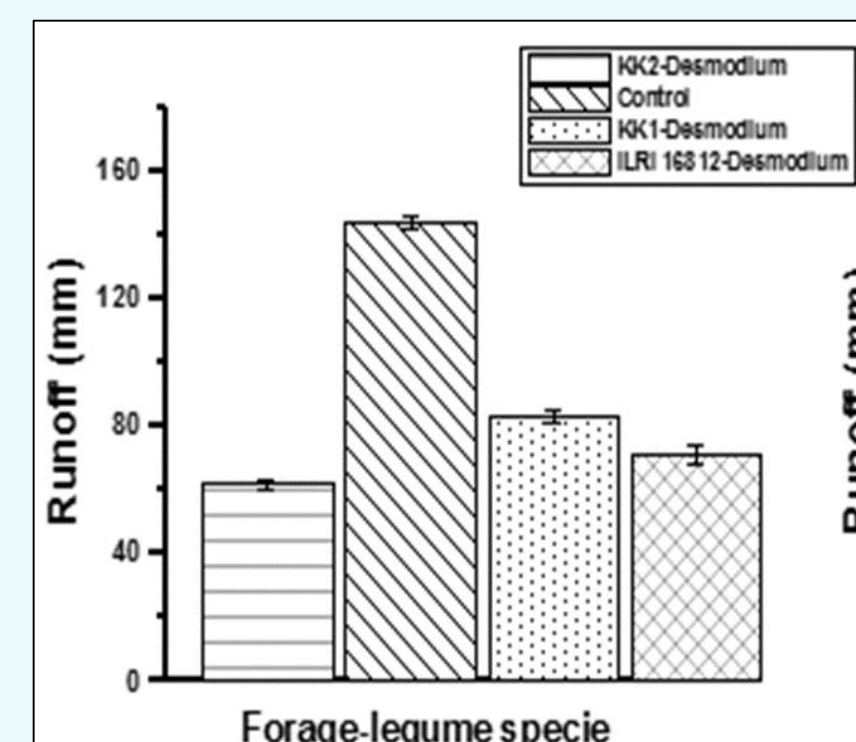


Figure 2: Forage combinations provided sufficient and beneficial soil cover

## Key Messages

- Improved forages provide higher biomass for livestock feed (Figure 1)
- Forage combinations provide sufficient and beneficial soil cover to subdue runoff (Figure 2)
- Forage chopping reduces feed wastage, improves feed intake and facilitates diet formulation (Figure 4)
- Rations based on local feeds have potential to enhance poultry and cattle nutrition (Figure 3)

### 3. Improved housing for indigenous chicken

#### Objectives and approach

- (i) To enhance use of local feeds for indigenous chickens

Research approach/method:

- A study to evaluate the current performance of local chickens under different management systems.
- A study to evaluate the effect of management systems (housing) on different production parameters chickens during the growth period

#### Key results

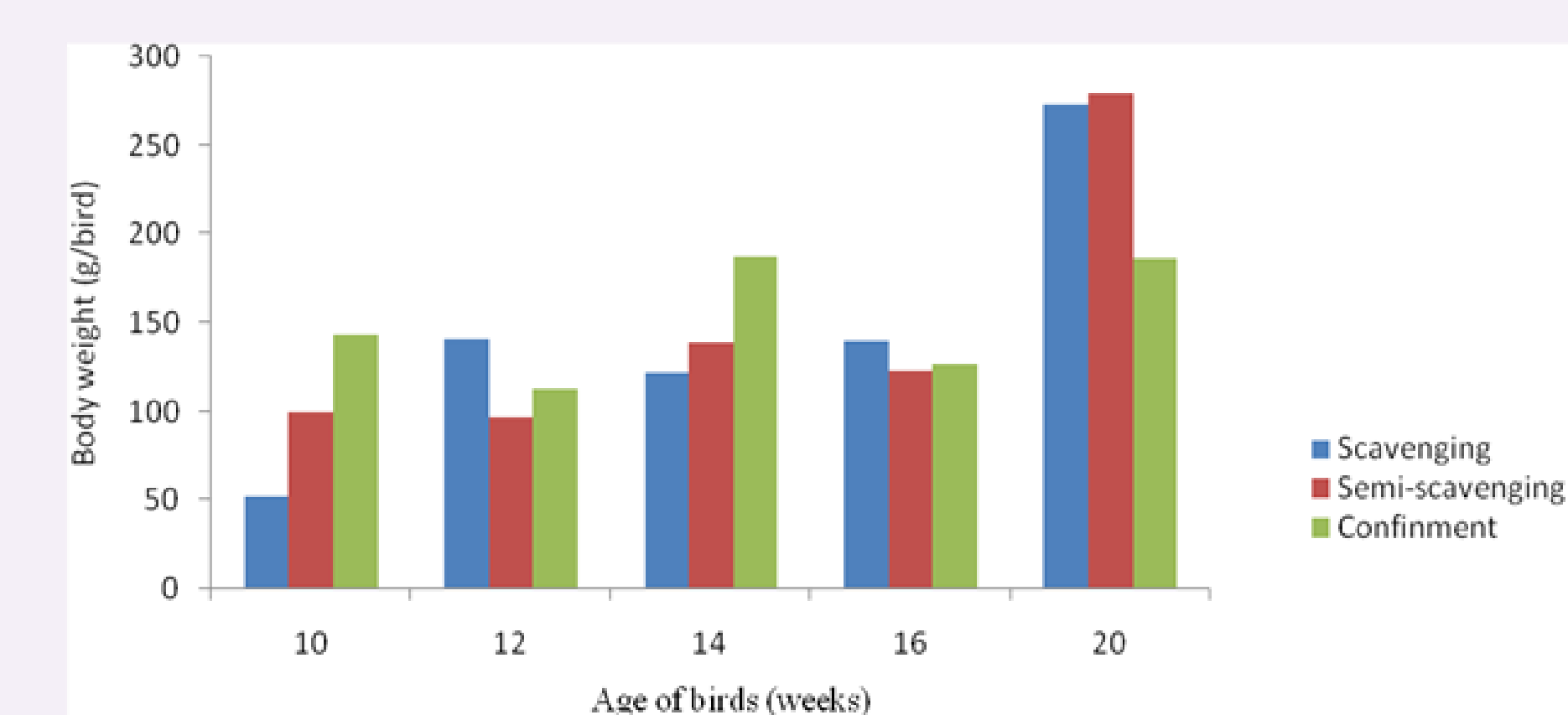


Fig. 8: Effect of nutritional management on body weight gain with age

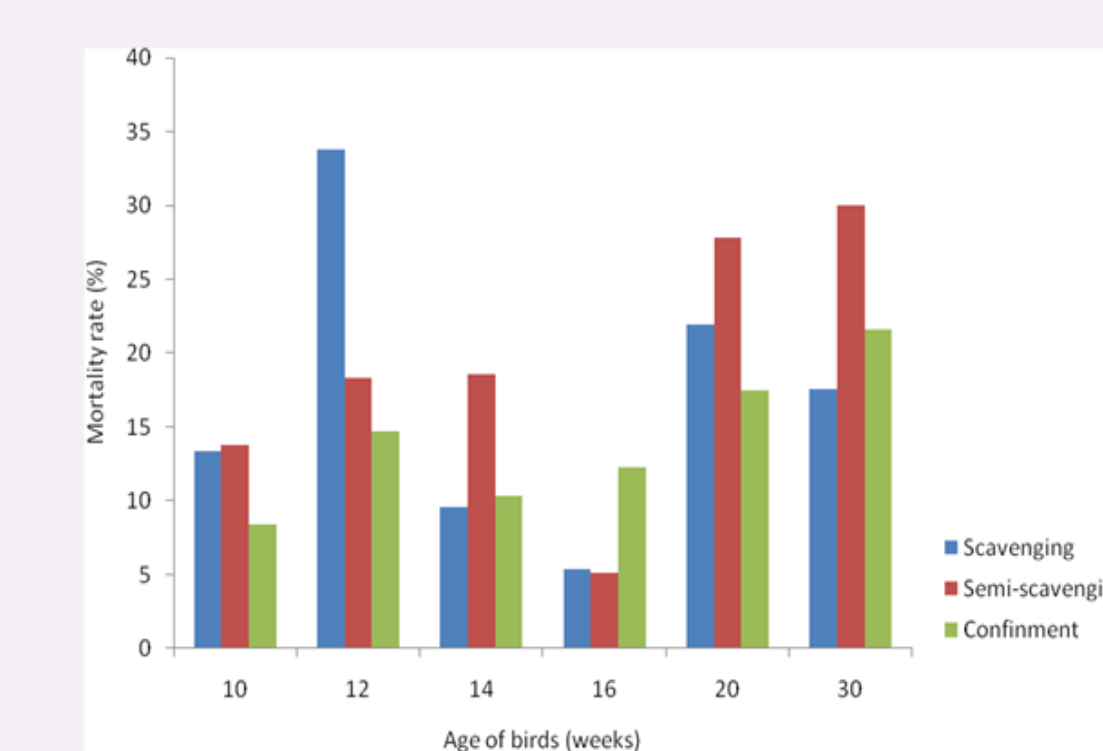


Figure 6: Effect of nutritional management on mortality rate with age



Figure 4: A forage chopper in Babati district



Figure 5: An improved chicken house in Babati District