

Forage choppers and Crop residue based rations for cattle:

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Key messages

- Forage chopping facilitates formulation of rations based on local feeds (Figure 1 and 2)
- There is availability of a wide variations of local feeds that allows formulation of difference rations hence giving farmers options to choose from (Table 2).
- Rations formulated based on local feed resources have a huge potential to improve milk production on smallholder farms (Figure 3).

Objectives and approach

- Introduced forage choppers to enhance use of forages and crop residues.
- Conducted a study to document current processing, storage and use of crop residues on farms.
- Formulated rations based on crop residues and tested its impact on selected farms in Babati District.
- Twenty four (24) crossbred dairy cattle from eight (8) households were used in the trial for four weeks during experimental period.

Key results

- Forage chopping enables farmers to effectively mix crop residue based rations (Figure 1).
- Mixing crop residue rations in the right proportions gives high quality feed ration (CP of 10-12%; OMD of 49-55%) – (Figure 2 and Table 1).
- The wide variety of locally available crop residues enable the formulation of 5 ‘best bet’ rations for farmers to choose form depending on what is available in their locality (Table 1).
- Crop residue based ration increased milk production by between 1-2 litres per day in just 4 weeks of the trial (Figure 3).

Significance and scaling potential

- There is a potential to scale up the technology through groups or individuals especially youth as a business. The significance include:
 - the more efficient use of feed materials (reduced waste)
 - a reduction of the manual labor of chopping often assigned to women
 - the exploitation of local feed sources in order to reduce costs of purchasing feed
 - improved milk production in the wake of improved feeding rations
 - a shift of practices towards more zero-grazing based systems
 - a labor-saving alternative to produce mixed feed rations
 - an increased interest among farmers to organize in groups
 - and the generation of employment opportunities for youths who assist women in transporting and operating the machines.

Partners



Figure 1: A forage chopper in action



Figure 2: One of the crop residue based ration

Table 1: Nutritional compositions of the crop residue based rations

Ration type	Chemical composition (%)					
	DM	CP	NDF	ADF	ADL	IVOMD
Ration I	90	11	61	40	8	53
Ration II	90	11	61	38	7	55
Ration III	90	10	62	40	8	54
Ration IV	90	12	63	42	9	49
Ration V	90	12	63	41	8	52

Table 2: Crop residue based rations for dairy cattle targeting different production levels

Feed ingredients	Ration composition (kg) and the target daily milk produced (Litres/cow/day)														
	Ration I			Ration II			Ration III			Ration IV			Ration V		
	10	15	20	10	15	20	10	15	20	10	15	20	10	15	20
Maize stover	4.4	3.1	1.3	5.0	3.4	1.9	3.1	2.8	1.9	4.4	3.1	3.1	3.1	1.9	1.3
Bean haulms	3.8	2.5	2.5	2.5	2.9	3.2	2.3	1.3	1.9	-	-	-	-	-	-
Pigeon pea haulms	-	-	-	-	-	-	1.9	1.9	1.3	-	-	-	3.2	3.2	3.2
Natural collected grass	-	-	-	9.6	10.0	8.0	10.0	8.0	8.0	16.0	14.0	11.2	12.0	12.0	10.0
Napier grass	16.0	24.0	24.0	-	-	-	-	-	-	-	-	-	-	-	-
Sunflower cakes	0.9	1.9	2.5	1.1	1.9	2.5	1.3	2.3	2.8	1.3	2.5	3.4	1.3	2.1	2.8
Maize bran	1.1	1.3	2.6	0.9	1.3	2.6	0.9	2.0	2.4	2.0	2.6	2.6	1.3	1.7	2.4
Total fresh feed (Kg/day)	26	33	33	19	20	18	20	18	18	24	22	20	21	21	20

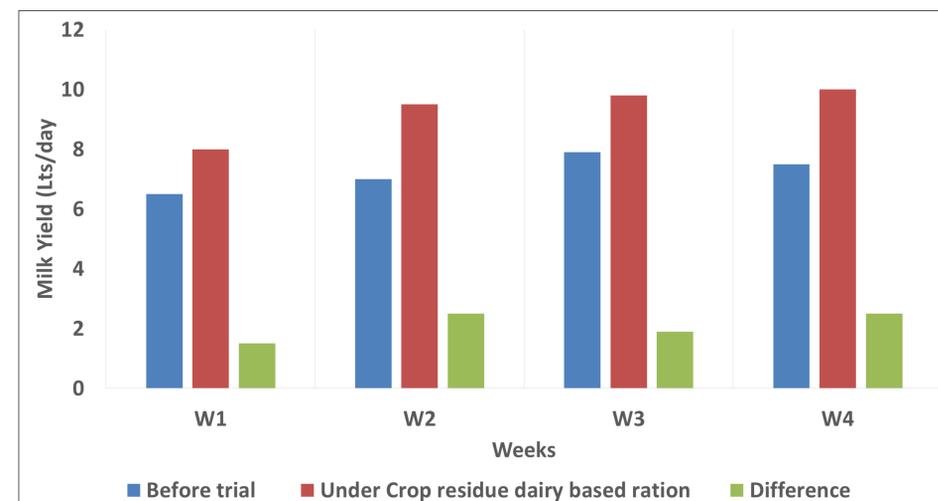


Figure 3: Effect of crop residue based rations on milk production of dairy cattle in Babati, district