

## Forage growing and on farm feeding of the produced forages

### A business case

Proper feeding is identified as the most limiting factor in dairy production. The feeding situation on many farms in Kenya is insufficient in quantity and quality, resulting in underfed dairy cows, which such reach out only to a limited percentage of their production potential. Cows require 50-60 kg of high quality fresh feed / day.

Ideally a cow is fed on fresh high-quality forage which supports intake, digestibility and productivity of the cows.

On farm produced forage is a way to bring down costs, which is important as feeding accounts for 60-70 % of the costs in dairy production. On farm produced forage can make dairy farming more economic and increase the profitability of the farm.

**Table 1: Need of feed for one cow**

Need of fresh feed / cow / day (kg)	Need of fresh feed / cow / year (kg)	Need of dry matter / cow / day (kg)	Need of dry matter / cow / year (kg)
55	20,075	13.5	4927

**Table 2: Need of land to produce feed for one cow**

Forage fresh (FM)	Prod. FM / ha / year (t)	Prod. / year : 20 t = number of cows fed / ha	Need of land to feed 1 cow exclusively on fresh forage (ha)
Brachiaria Mulato 2*	40	40 t : 20 t = 2 cows	0.5
Brachiaria Cayman*	51	51 t : 20 t = 2,5 cows	0.4
Brachiaria Cobra*	50	50t : 20 t = 2.5 cows	0.4
Forage Dry matter (DM)	Prod. DM / ha / year (t) ((range))	Prod / ha / year : 4.92 t / year / cow = no of cows fed / ha	Need of land to feed one cow exclusively on dry matter (hay)
Brachiaria Basilisk**	17.84 ((15.24 – 20.46))	17.84 t : 4.92 t = 3.62	0.276 ha
Brachiaria Cayman**	23.52 ((18.62 – 28.42))	23.52 t : 4.92 t = 4.78	0.209 ha
Panicum Mombasa**	16.54 *** ((10.61 – 22.46))	16.54 t : 4.92 t = 3.36	0.298 ha

\* data from 2 commercial farms in Eldoret

\*\* data from cutting regime trials in Meru

\*\*\* many farmers in Meru area favour Panicum Mombasa due to high biomass production. This is not reflected in this number. Most probably the conditions on one site have not been favourable for Mombasa which has a much higher production potential.

**Table 3: Increase of productivity per cow after chagement of feeding to a stronger forage-based diet**

The table gives four examples of farms in Meru county which produce improved forages and changed their feeding regime towards an increased portion of self produced forage. It has to be noted that the cows where not fed exclusively on improved forages, if that would be the case the rise in milk productivity might have been higher. All interviewed farmers have high potential exotic breeds (Frisian and Holstein).

Farmer	Cows total (milking cows)	Average prod of cows before	Average prod of cows after	Increase average per cow in l (%)	Increase in income / cow /year (KES)*	Total income from milk sales/year (KES)
1	11 (4)	(8-9 l)	20 l (T: 80 l)	11 l (122 %)	3305 l / cow 114.070 (T: 456.000)	829.600
2	29 (12)	18 l (total 212 l)	24 l (T: 300 l)	6 l (33 %)	1830 l / cow 62.220 (T: 746.640)	3.111.000
3	5 (2)	15 l	18 l	3 l (20 %)	915 l / cow 31.110 (T: 62.220)	373.320
4	15 (6)	13 l (T: 40 l – from 3 cows)	26 l (T: 160 l – from 6 cows)	13 l (100 %)	3965 l / cow 134.810 (T: 808.860)	1.659.200

Lactation period: 305 days/year, price per 1 l milk: 34 KES

**Table 4: Profit per cow / year calculated for four commercial oriented farmers in Meru county based on the productivity data for forages from table 2 and 3 and the increase in milk productivity by stronger forage oriented feeding**

Farmer	Forage necessary to feed 1 cow /year average of 4 Brachiaria (ha)	Prod. cost forage / year / cow Average (KES)	Additional income from higher milk yield / year / cow (KES)	Additional profit / cow / year (KES)
1	0.36	21,960	114,000	92,165
2	0.36	21,960	62,200	40,240
3	0.36	21,960	31,100	9,140
4	0.36	21,960	134,810	112,850
Average				63,598

Table 4 shows that there are big differences in the profitability on different farms. The forage production is highly dependent on the environment and the management of the plots. If the right forage is chosen and good management practices are applied, the production potential of the forages is high and the profitability of the dairy farms can be improved significantly.

### Conclusion

Even without referring to concrete numbers. All the farmers increased their profit per cow. The increase however differs, but the greater picture is that producing and feeding fresh forage to dairy cows has in general a positive effect and can be recommended to farmers

### Acknowledgements

This work received financial support from the German Federal Ministry for Economic Cooperation and Development (BMZ) commissioned and administered through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Fund for International Agricultural Research (FIA), grant number: 81219431.