

LIVESTOCK FEEDS ASSESSMENT REPORT FROM MERU COUNTY- KENYA



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Introduction

Among forty-seven counties in Kenya, we choose Meru County in Kenyan highlands with successful dairy as business oriented. Administratively, Meru is divided into four sub-counties namely- Imenti Central, Buuri, North Imenti and South Imenti. We did livestock feeds assessment in Central Imenti sub-county, involving women and men groups. To narrow down to the specific area, we linked to Meru Dairy Union an umbrella that hosts up to 55 dairy societies in the area. From the list, we discriminated against dairy societies that had some external livestock improvements projects with Alliance of Bioversity and CIAT (ABC) and International Livestock Research Institute (ILRI) or any other non-governmental organization. Meru Union's knowledge on the societies that had not interacted with external livestock improvement initiatives aided arriving on a dairy society fitting the description. We settled on Githongo Dairy Society. The study aimed to inform the Netherlands funded project: *Feed and forage seed business models to support further professionalization of the dairy sector in Kenya and Uganda -2019- 2022*.

Approach

We used enumerators drawn from Alliance Bioversity and CIAT (ABC) and Meru Dairy Union in Meru as stipulated in (Table 1).

Table 1. Attendants of G-FEAST in Meru on 12 February 2020 at Meru Dairy Union office

Name of Enumerator	Affiliation
Ruth Odhiambo	ABC
Fredrick Muthomi	ABC
Dorcas Kigetui	Meru Dairy Union
Kenneth Kithinji	Meru Dairy Union
Dorothy Gacheri	Meru Dairy Union
Ronney Gikundi	Meru Dairy Union
Solomon Mwendia	ABC

We carried the exercise separately for women and men. Usually when put together, women rely on the men to provide information, leaving out women's opinions. Culturally men are the household heads and women expect them to lead in responses.

Results

Inferences from women

On land sizes in the area, women perceived land holding categories as; small <0.25 acres, medium: 0.25 to 2 and large farms 2 acres and above. Majority of the households are in the small category comprising $\approx 80\%$ while both large and small constitute about 30% (Figure 1).

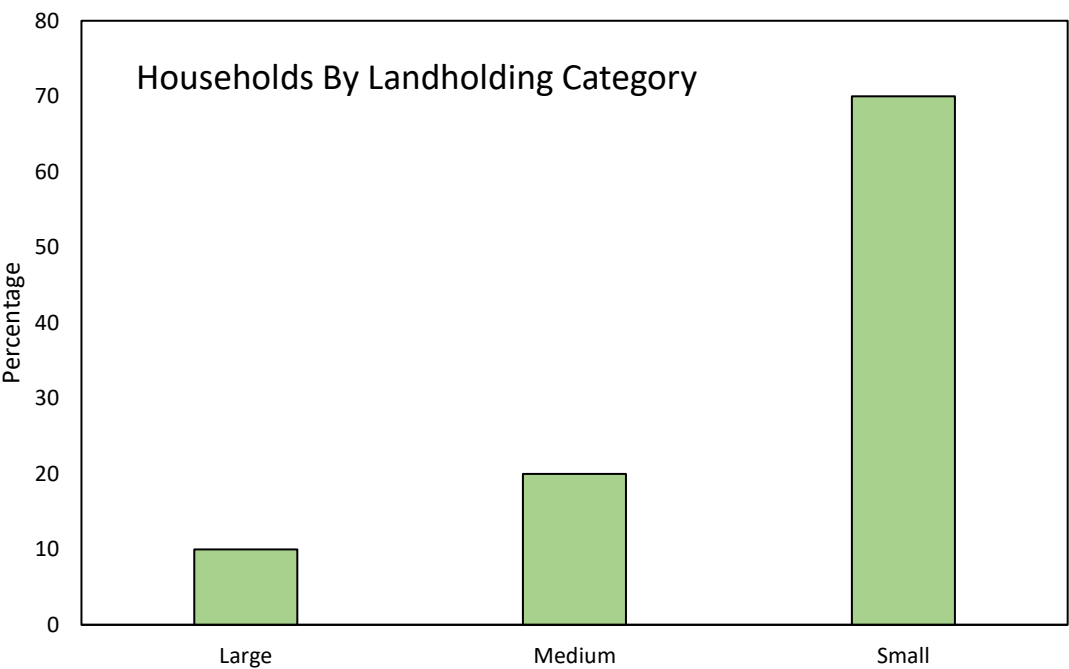


Figure 1. Percentage land holdings in Githongo area as perceived by women during the focused group discussions (FGD) in Meru County.

Regarding livestock kept in the area, improved lactating dairy cattle had the highest Total Livestock Units (TLU) of ~2.9, (Fig. 2). Improved dairy in dry condition i.e. non-lactating followed, and then improved dairy heifers. The least of ~ 0.01 TLU was by goats. By extension, the figure represents the order of livestock species preference by households.

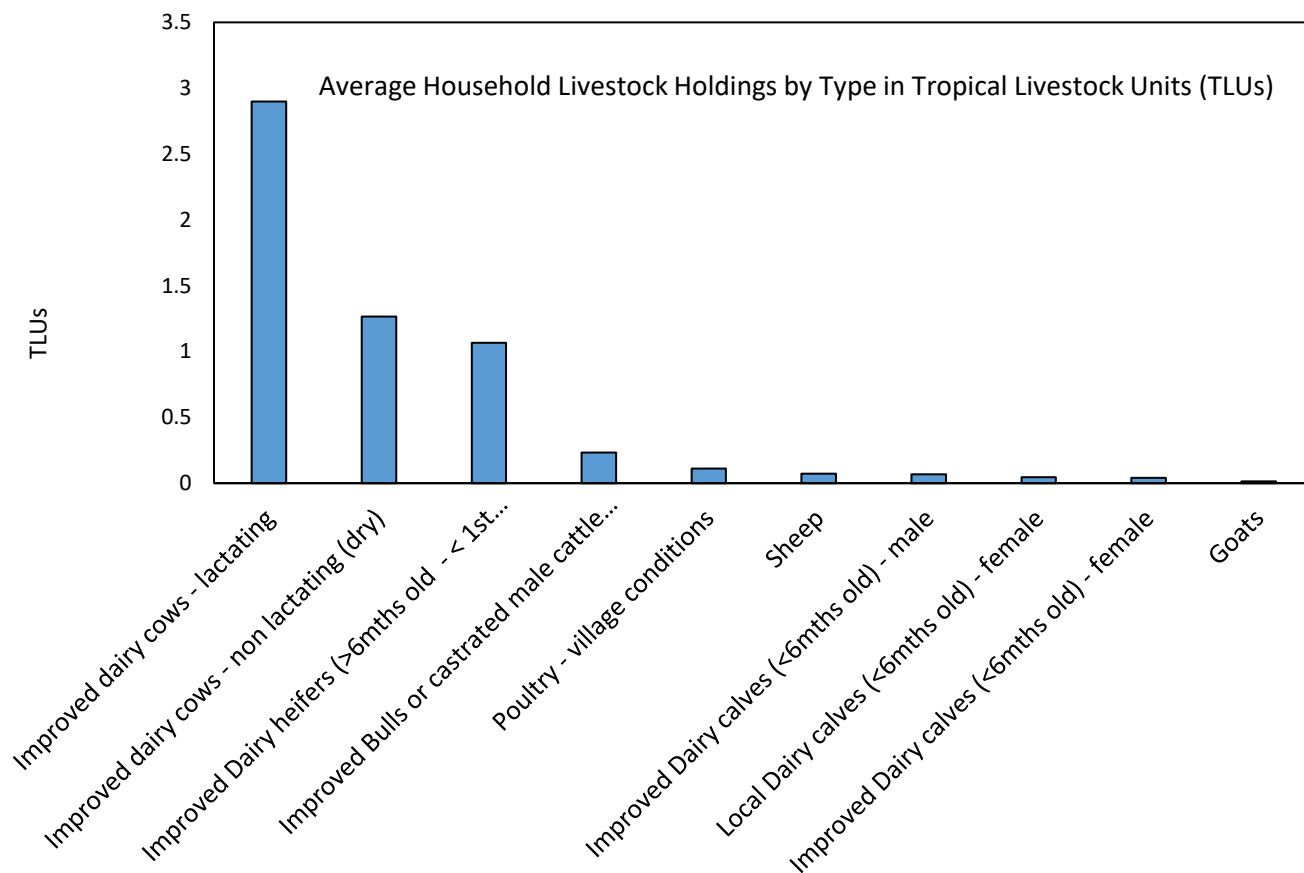


Figure 2. Total livestock units (TLU) of livestock species across households as perceived by women in Githongo area- Meru County.

The order of crops grown in the area include maize, potatoes, cabbages, carrots, tea, beans and sweet potatoes, and in that order of decreasing land allocation. Maize the leading crop get land allocation of approximately 0.13 ha while the least sweet potato takes 0.017.

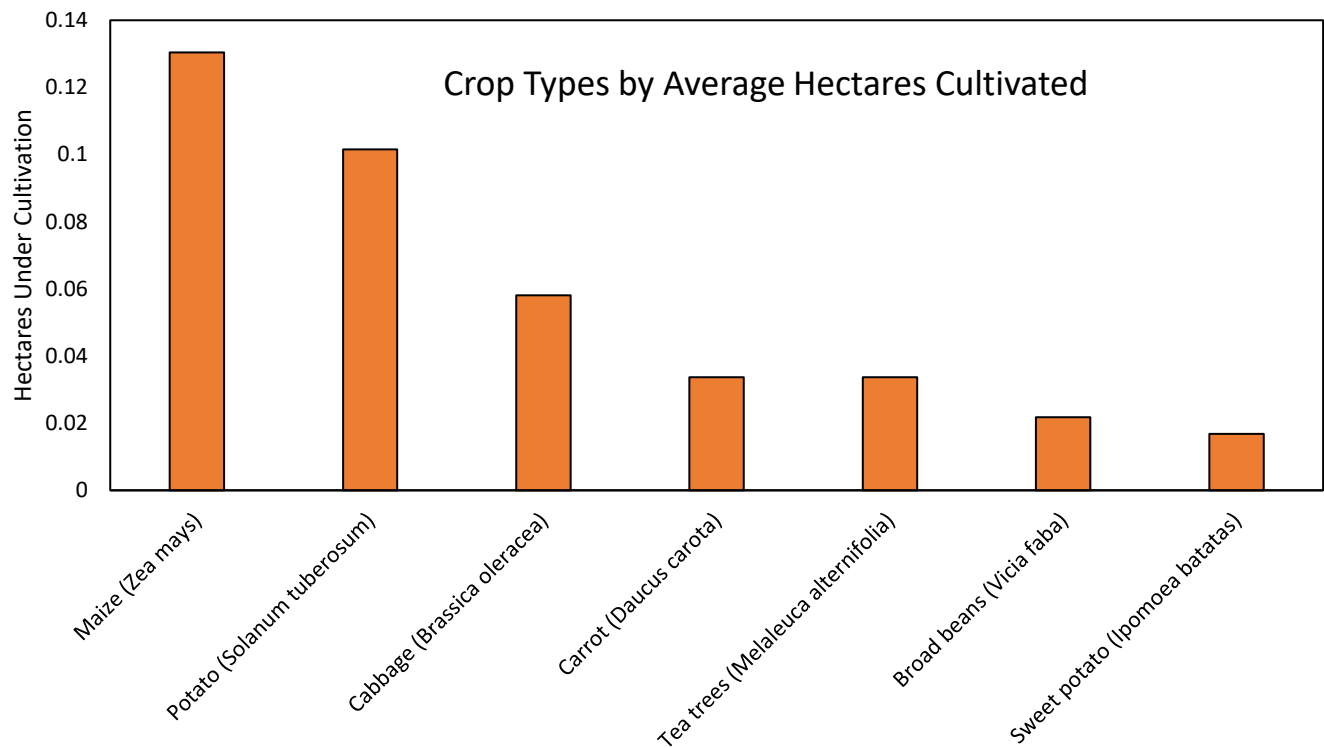


Figure 3. The order of general crops grown by land allocation (ha) as perceived by women in Githongo area-Meru County

Among the cultivated fodder crops, Napier grass takes the lead followed by *Calliandra*, a forage legume tree, then Kikuyu grass. Due to the small land holdings in the area, the land allocated for Napier grass is generally low.

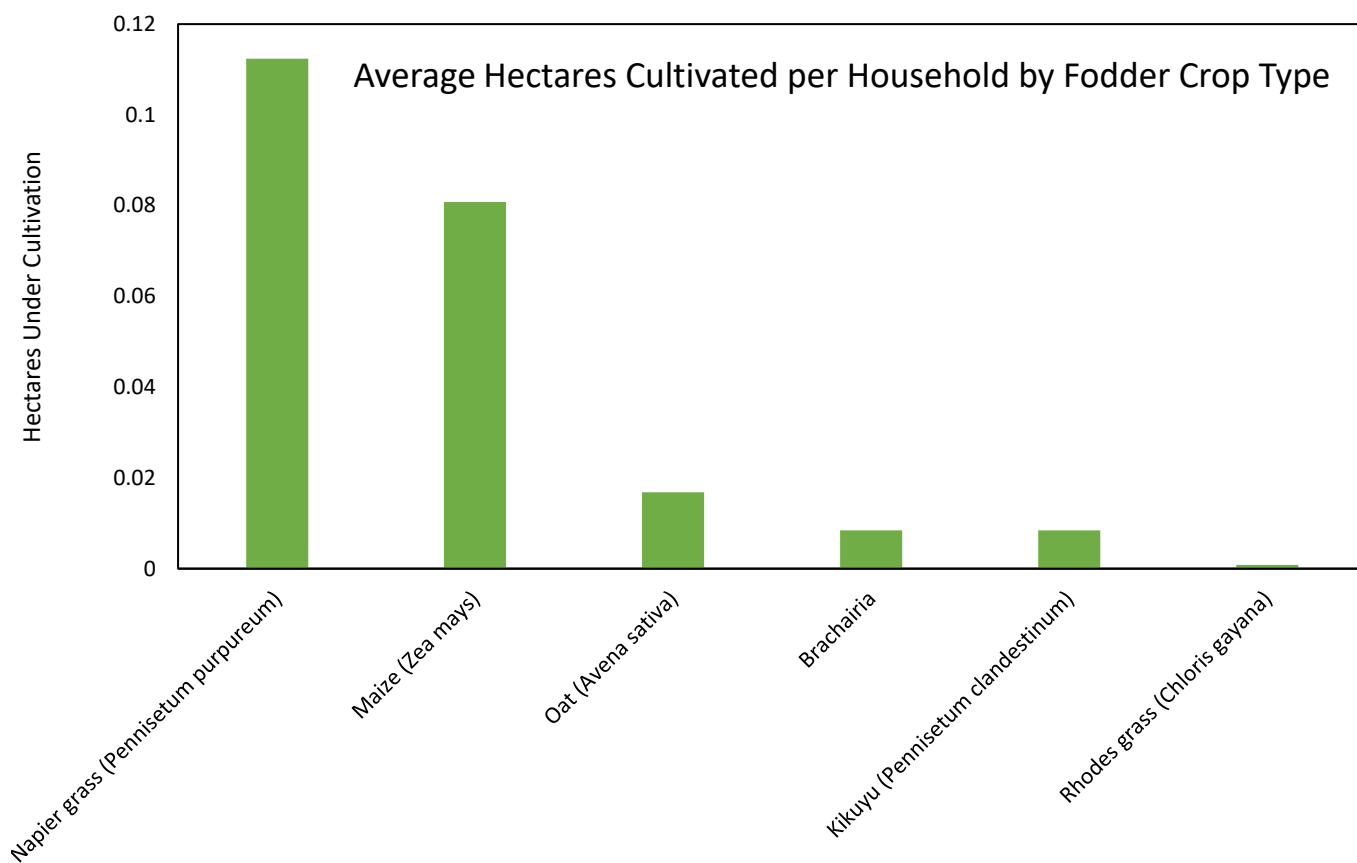


Figure 4. The order of cultivated forage and fodder crops in Githongo area as perceived by women, Meru County

Cultivated fodder, provide most of the dry matter intake 44% similar to metabolizable energy and crude protein to the livestock (Figure 5).

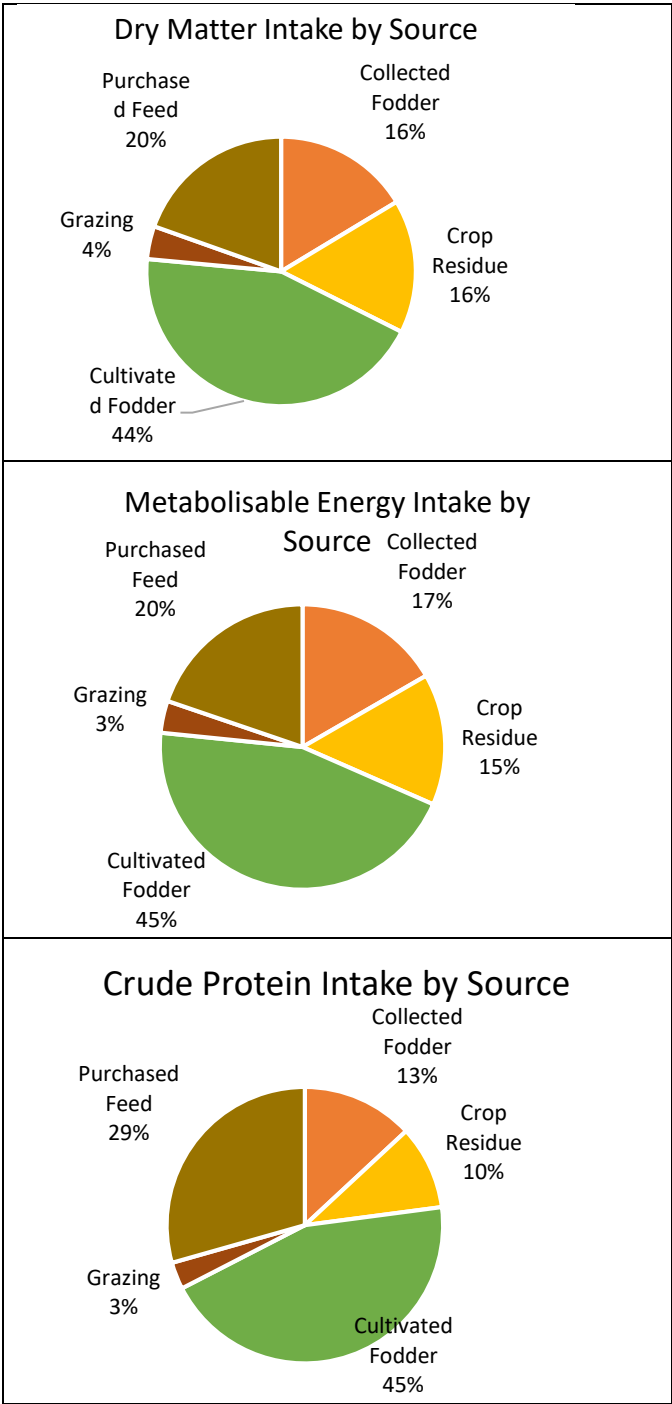


Figure 5. Sources of livestock dry matter, metabolizable and crude protein intakes as perceived by women in Githongo area, Meru County

Generally, Githongo area receives bimodal rainfall pattern with most rainfall occurring in the months of April–May, then in the month of November–December. It is only in July, August and September that reports minimal rains (Figure 6). Green forages contributes the most feedstuff followed by crop residues, then leguminous crop residues, concentrates and least the from grazing.

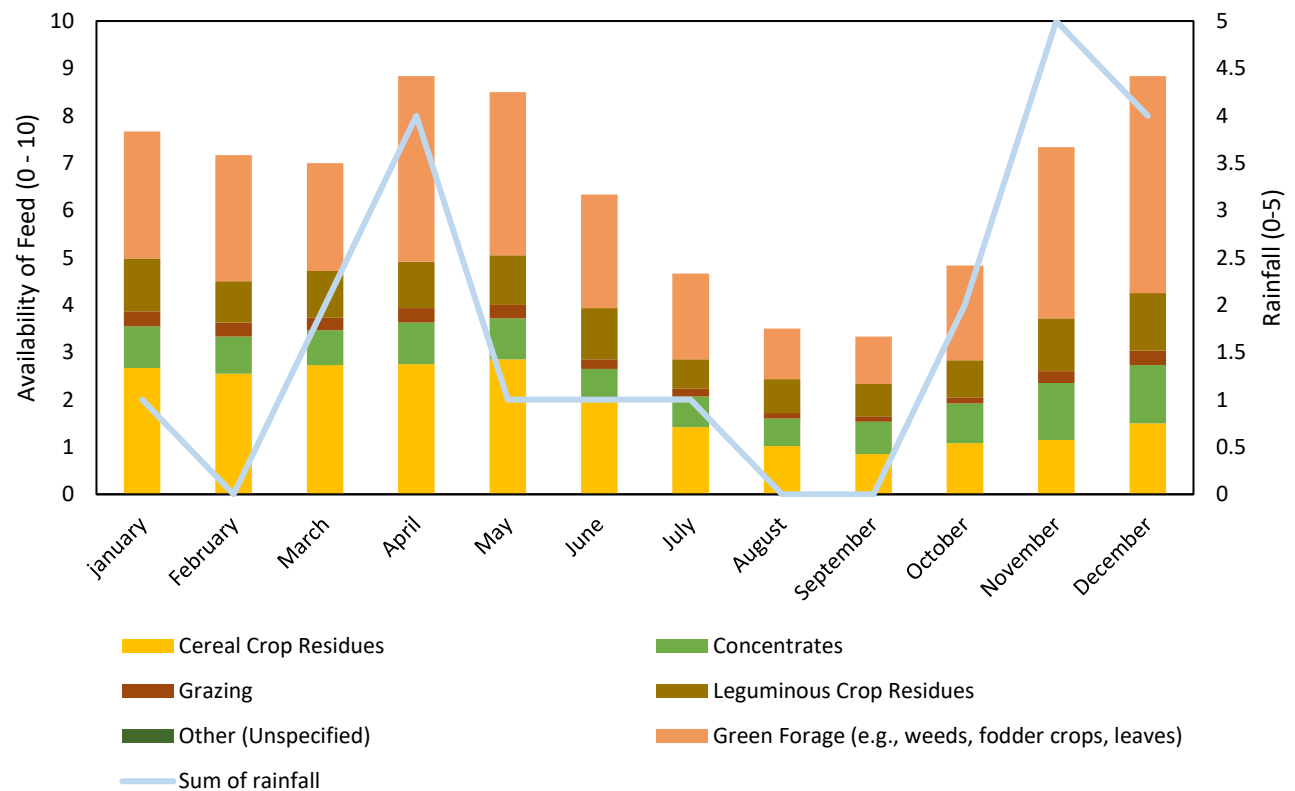


Figure 6. Sources of animal feeds and rainfall scores (0-5) in a calendar year as enumerated by the women in Githongo area, Meru County.

The average price for cattle, sheep and goats generally increase from January to December. At no time the price for sheep goes higher than that of goat. Within the year, the price variability range USD 300-900 (cattle), 23.4 -55.5 (goat) and 24 – 55.5 (sheep) Figure 7. The goat's price rise in February and stabilize until August before raising further in September.

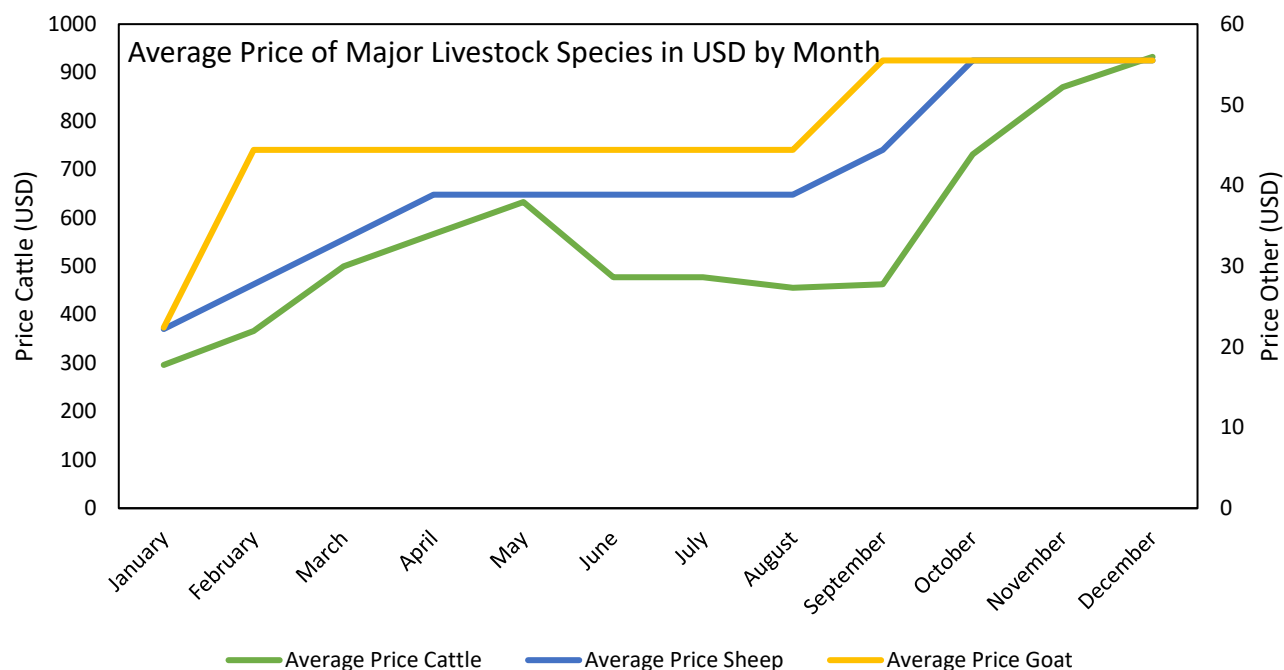


Figure 7. Price trends for cattle, sheep and goats as perceived by the women in Githongo area, Meru County.

Milk production and prices vary within the area (Figure 8). Milk yield remains relatively constant within the range of 19.3–22.3 liters in a year. However, milk price start at high price of 0.37 USD/liter in January progressively dropping to the lowest price of 0.33 USD by December.

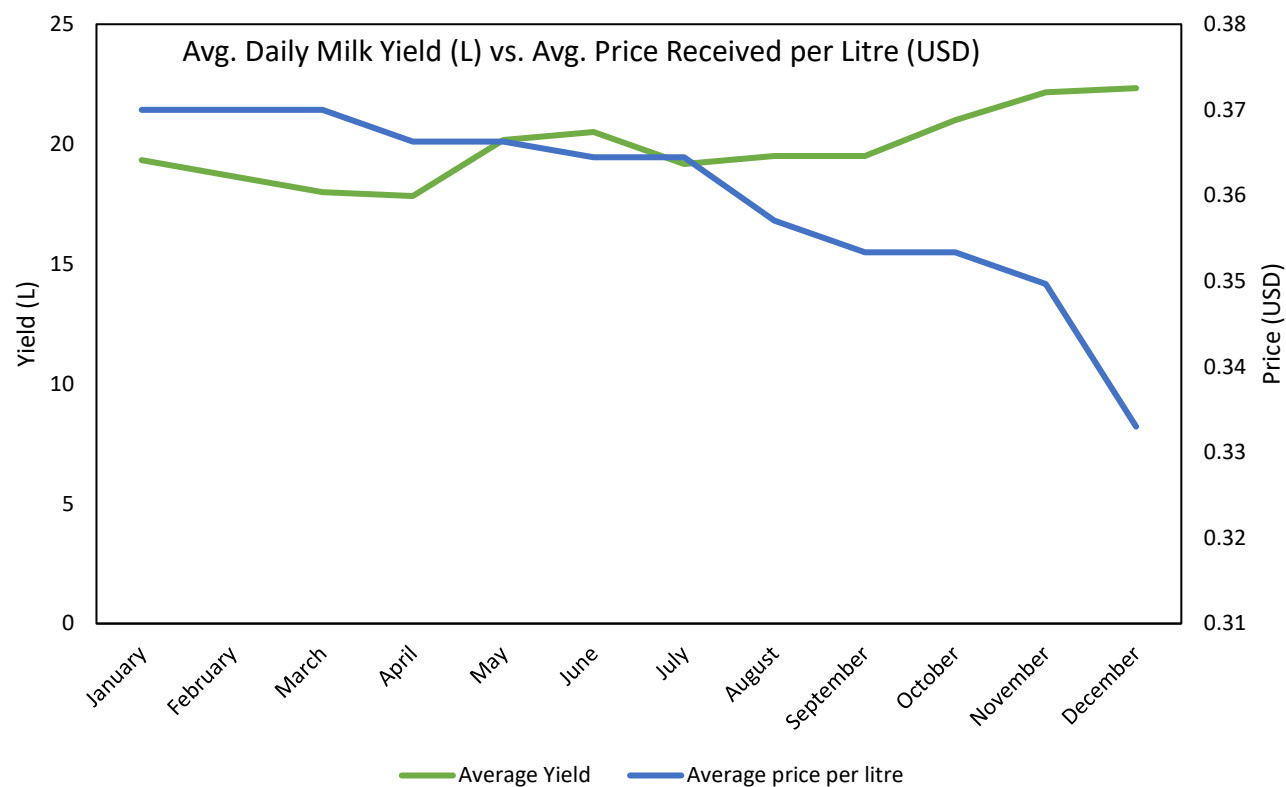


Figure 8. Trend of milk yield and prices across a calendar year as perceived by women in Githongo, Meru County

Livestock takes 52% of the households' income (Figure 9), an indication is the key income earner for families in the area followed by cropping at 45% and only 3% from businesses. Efforts to improve farming efficiency for both livestock and crops therefore, would benefit the communities in the areas of study and other similar setups

Average Household Income by Activity Category

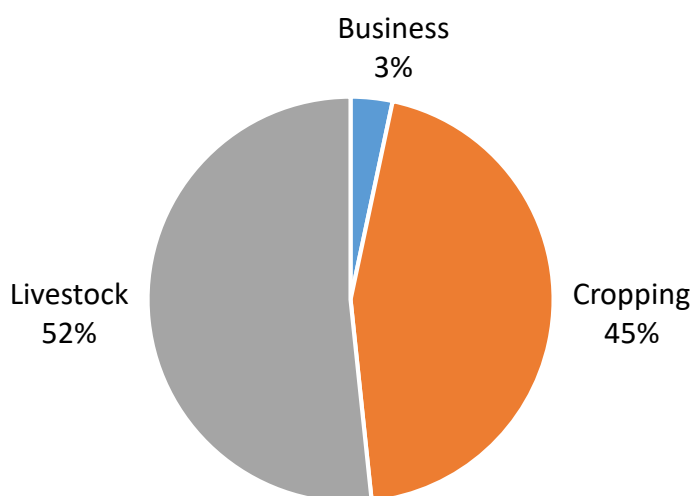


Figure 9. Percentage contribution by different activities towards household incomes as perceived by women in Githongo area, Meru County

The average daily labor rates for women and men are similar (Figure 10) \approx 4 US dollars per day.

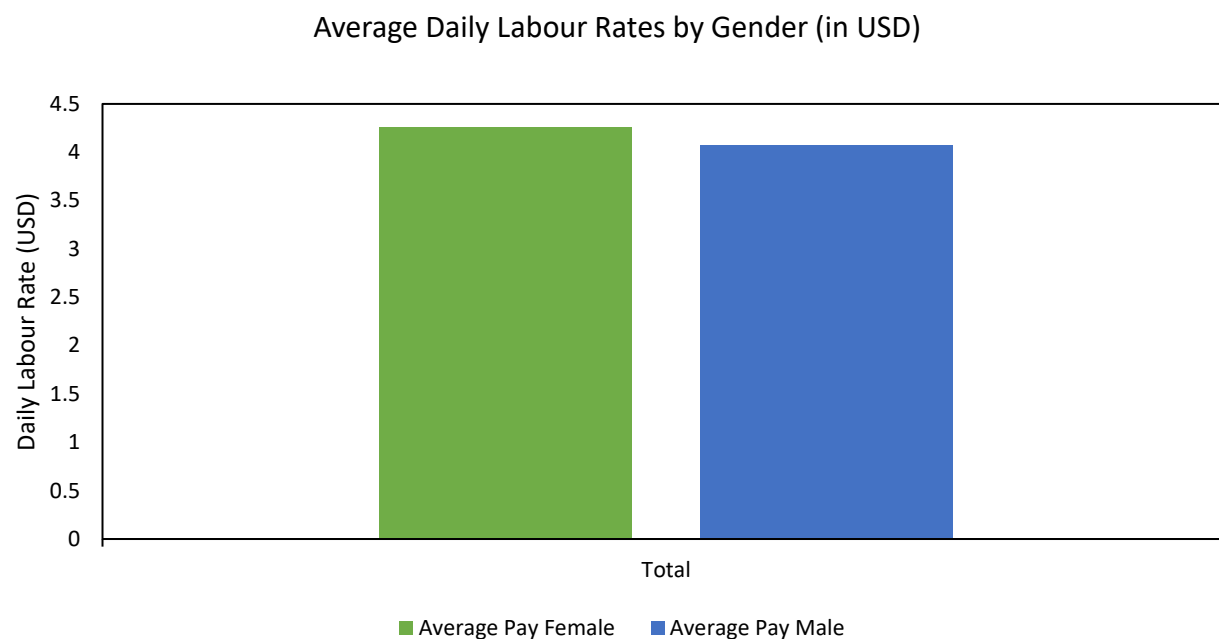


Figure 10. Average daily casual labor rates for women and men as enumerated by women in Githongo area, Meru County

Inferences from Men

Similar and close to women, men identified land categories (acres) as follows (Figure 11). Those considered small ranged <0.25 , medium $0.25 > 2$ and large >2 . The categorization by men put most of the households in smallholdings (75%), medium 20% and 5% for the large. It is at convergence for women and men that most households own between 0.25 to 2 acres to the tune of $>90\%$ of the households.

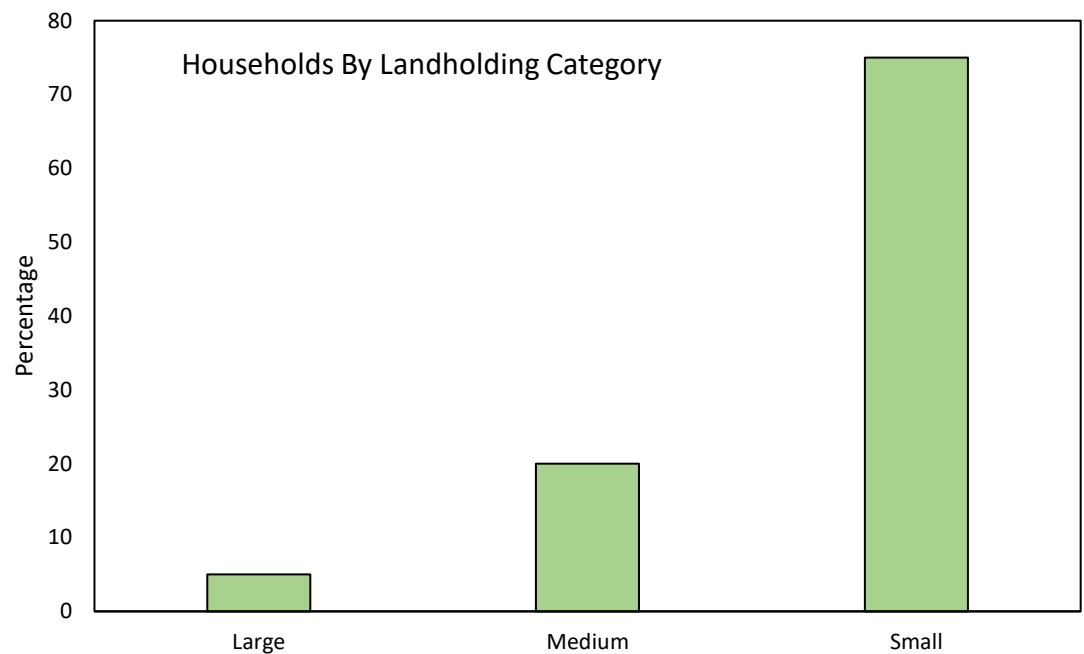


Figure 11. Land categorization and households proportionate as perceived by men in Githongo area, Meru County.

Total livestock Units (TLU) in the study site as considered by men put improved lactating cows the highest of 3.4 and least 0.04 for local or castrated male cattle (Figure 12). The gap between lactating dairy cows and the second in ranking i.e. improved dairy heifers (>6 months old and less than 1st calving) is wide being at > 5 times as high for lactating improved cattle. This was very much similar to women observation in the same area (Figure 2).

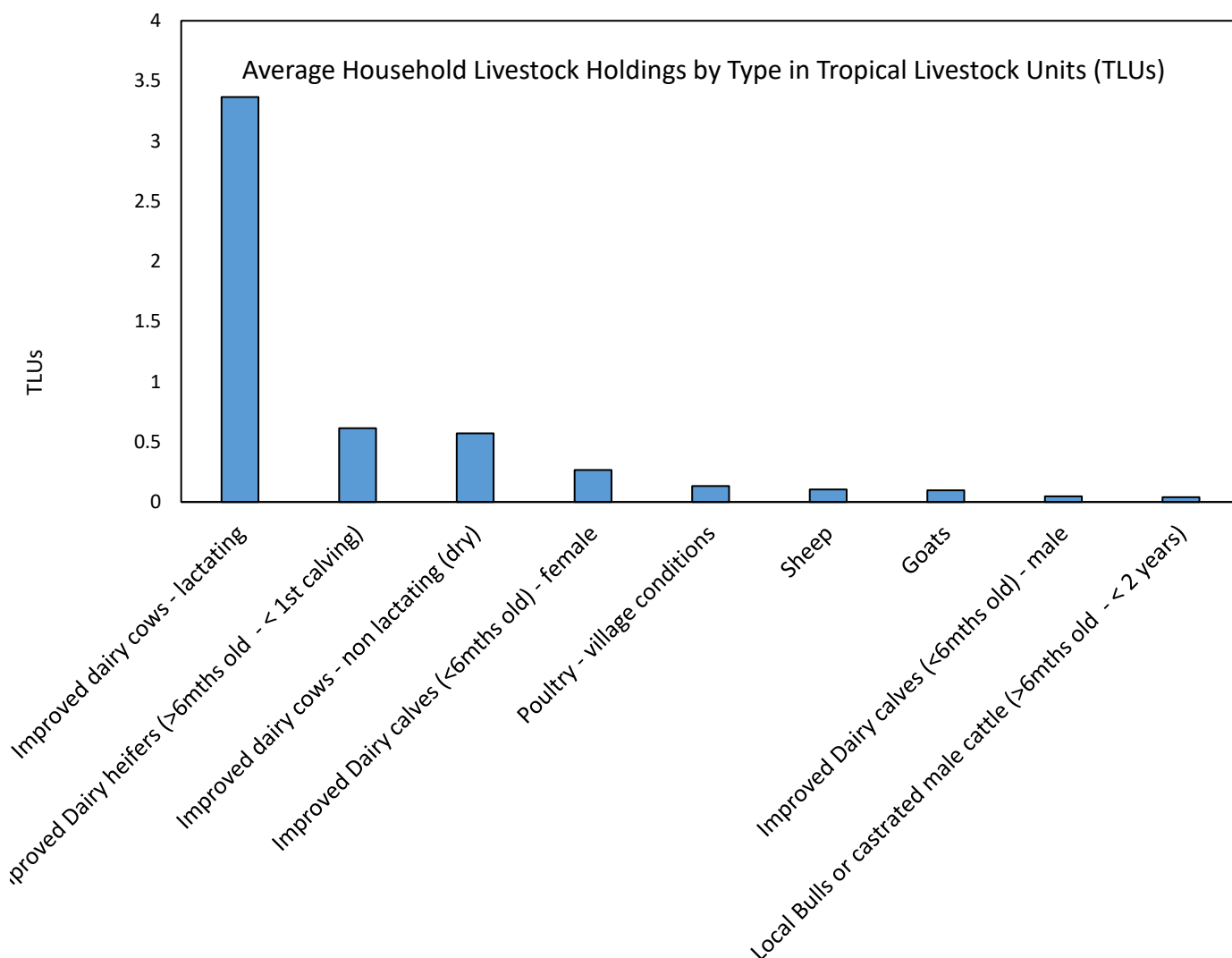


Figure 12. Average household livestock holdings in TLUs as viewed by men in Githongo area, Meru County.

Crops ha coverage were in the order tea > maize > coffee > cabbage > potato > bananas \approx beans (Figure 13). Tea takes about 0.51 ha and beans the least 0.01

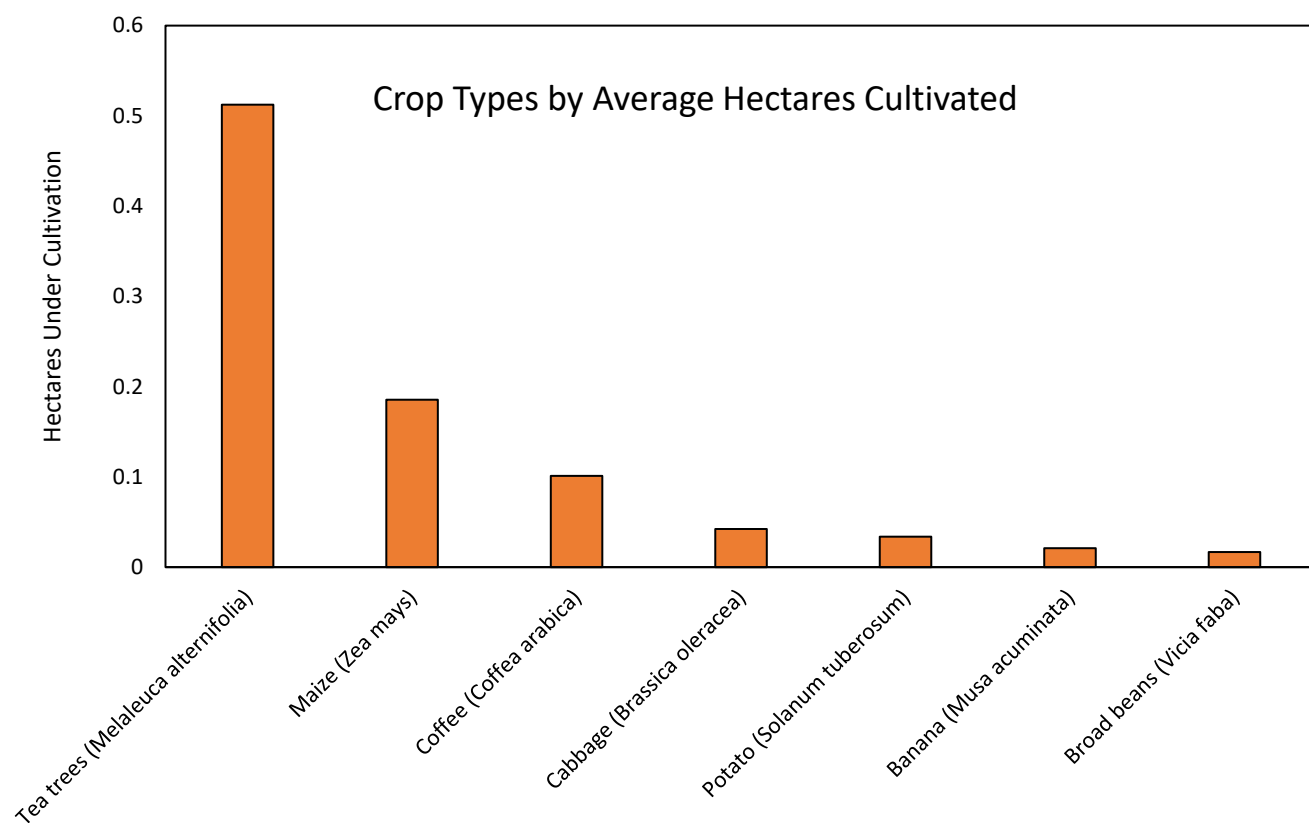


Figure 13. Crops and land allocation as perceived by men in Githongo area, Meru County

According to men, fodder cultivation in the area is limited to few grasses. Maize, Napier grass and kikuyu grass, and in that decreasing order (Figure 14). Calliandra, a fodder tree is also found in the area. This contrasts with what women reported as grown in the area for livestock (Fig. 4), where *Brachiaria* and oat are also involved but not according to men. While maize and Napier grass are the two leading by either gender, men thought maize was the most utilized and the women believed the vice versa.

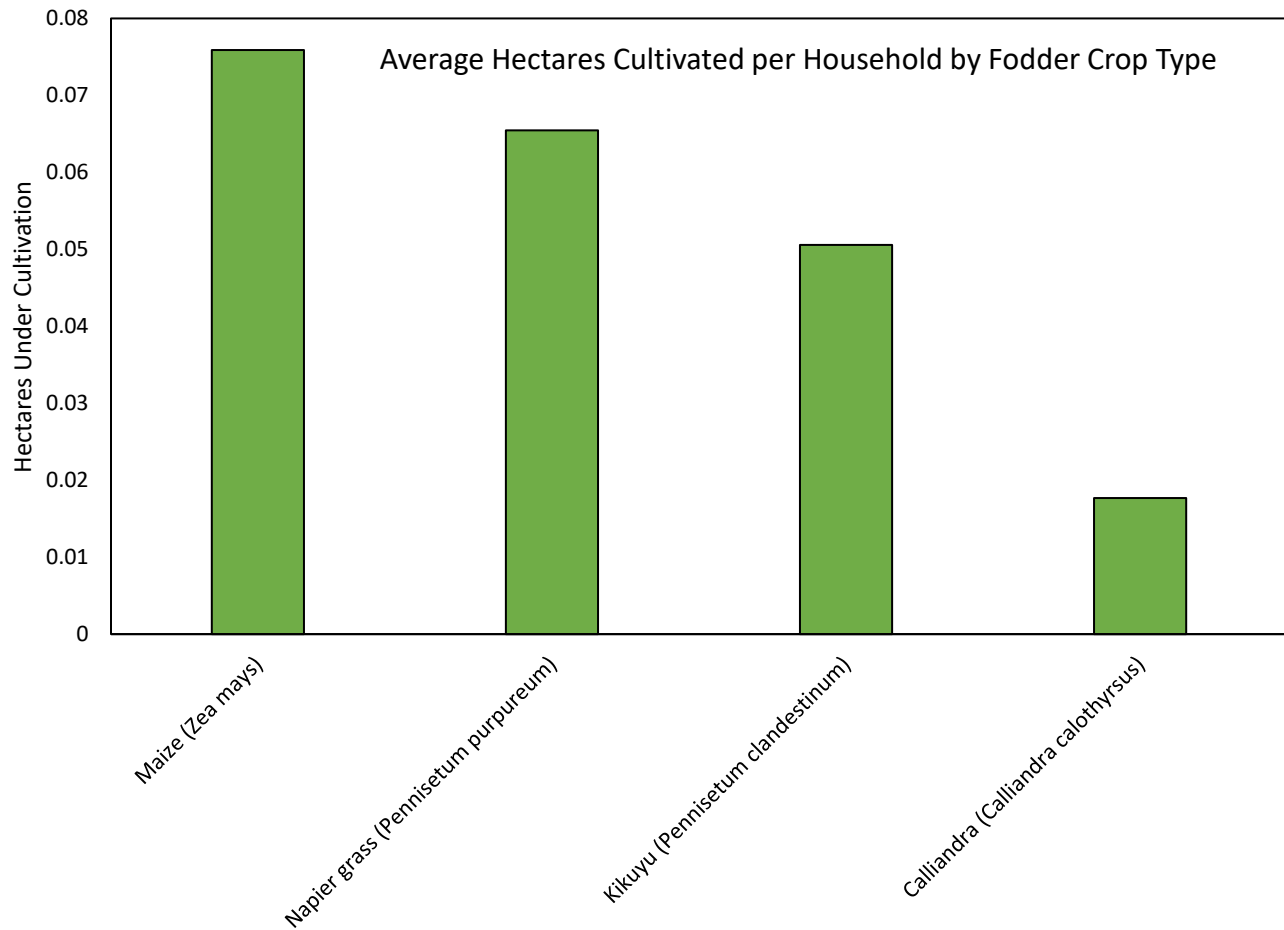


Figure 14. Cultivated forages by land allocation as perceived by men in Githongo area, Meru County

Cultivated fodder contributes most of the dry matter and metabolizable energy (Figure 15). Purchased feed follow closely and even contributing most of the protein than from cultivated fodder. The dairy is more commercial oriented with fodder cultivation and purchasing supplements well adopted. It is likely with introduction of better forages in the area would be easily be accepted if the forages prove themselves.

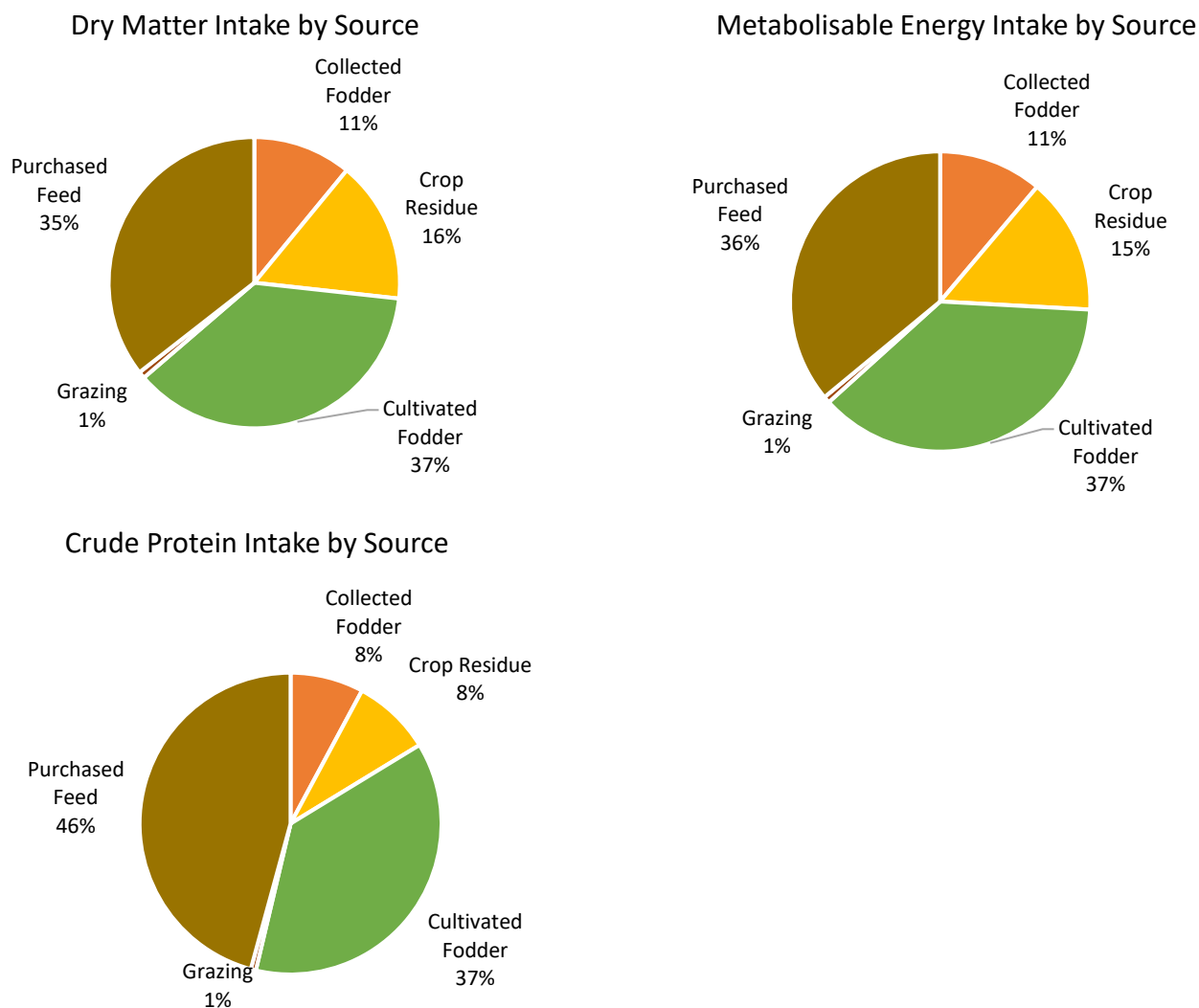


Figure 15. Percentage contribution of various feed sources to livestock dry matter intake, metabolizable intake and crude protein intake as viewed by men in Githongo area, Meru County.

The area is characterized by two main rain seasons February–May and October –January (Figure 16) much similar to what was reported by women. It is noteworthy not at any month of the year men accorded highest score of 5, suggesting forage is never enough even during and soon after rain seasons, a similar pattern as reported by the women (Figure 6). As expected availability of livestock feeds follows closely rainfall pattern, therefore being most abundant in April–May season.

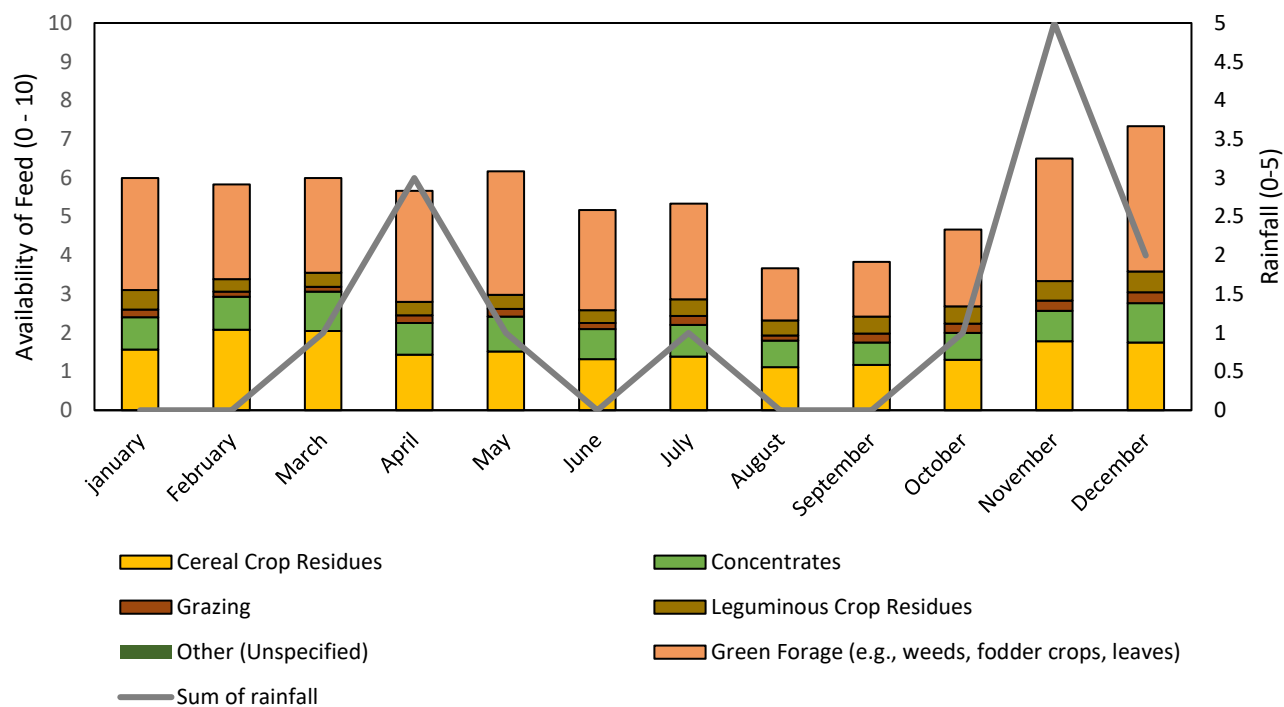


Figure 16. Livestock feed availability and rainfall scores as enumerated by men in Githongo area, Meru County.

Average price for the major livestock species (cattle, sheep, goats) in the area increase gradually from the beginning of the year to December (Figure 17). Similar to women’s observation, at no time did price for sheep surpass that of goats. The price for cattle ranges USD 555–915.

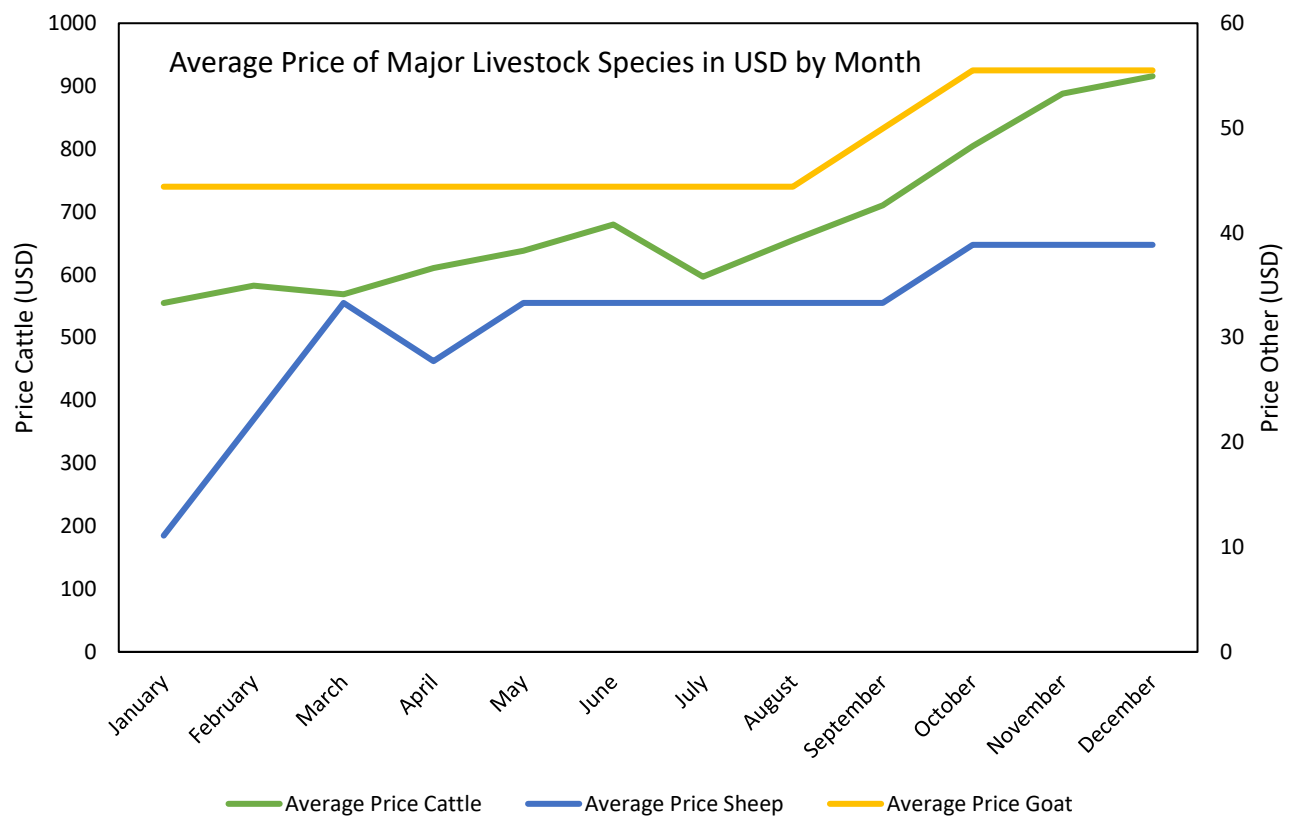


Figure 17. Monthly prices for the major livestock species as viewed by the men in Githongo area, Meru County

Generally, milk production is high at the beginning of the year dropping gradually until October before rising again in November and December (Figure 18). The milk prices follow the production trend, but continues to drop in November and December, and the latter the lowest in a year. At peak production, the average is about 26 liters of milk and lowest 21 liters in the month of October. However, milk prices (USD) per liter is lowest in December (0.34) and peaks to 0.37 in January. The trend is generally similar to that of women (Figure 8).

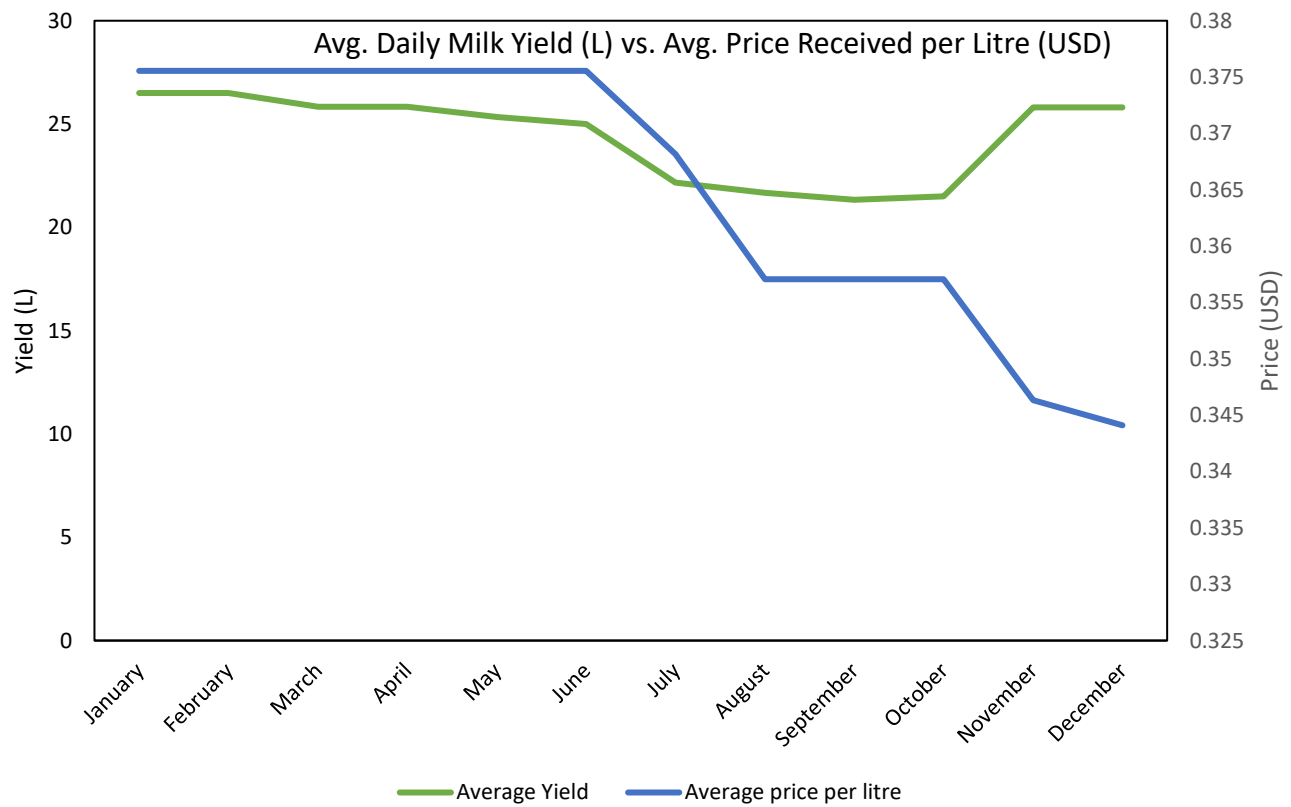


Figure 18. Monthly average milk production and prices as perceived by men in Githongo area, Meru County

The household incomes largely depend on cropping that takes up to 51% as reported by men (Figure 19). Livestock comes next at 45% followed by businesses and labor at 2% each. Unlike for the women (Figure 9), cropping according takes a larger share income compared to women who put it at 36% in close proximity with livestock at 34%. It appears men mostly go for hired labor for income as this was not motioned by women.

Average Household Income by Activity Category

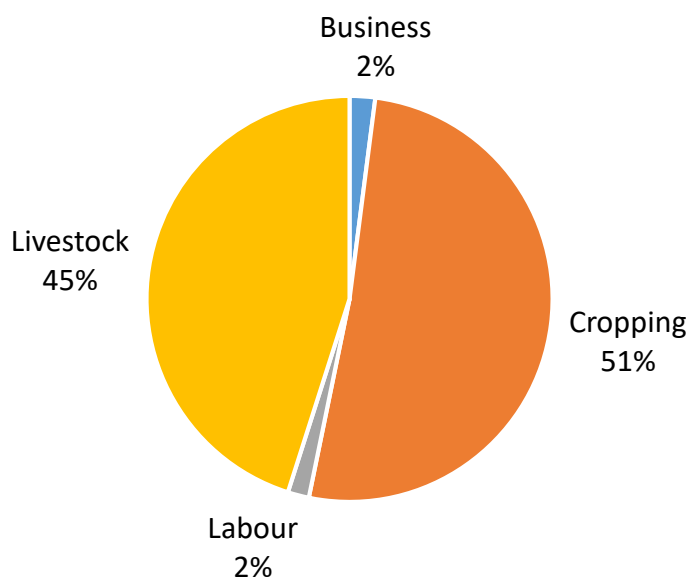


Figure 19. Household sources of incomes (%) as viewed by men in Githongo area, Meru County

When taking paid labor is considered, the pay appeared similar for either gender as perceived by men. A similar, trend as reported by women (Figure 10).

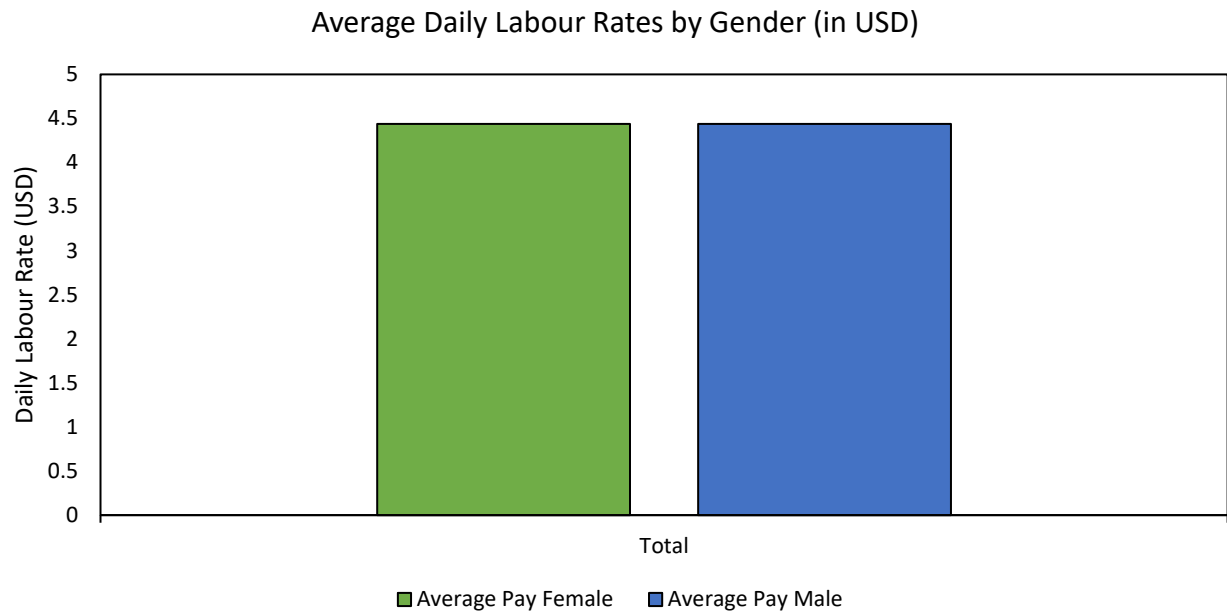


Figure 20. Average daily labor pay rates for men and women as reported by Men in Githongo area, Meru County

Table 2. Major livestock related problems as viewed and ranked by women and men in Githongo area, Meru Sub County

Problem	Suggested solutions	Rank
<i>Women</i>		
Diseases	• Increase trainings and more vets	3
Feed availability	• Reduce price of concentrates and more forage grasses	2
Low milk price	• Cooperative to increase milk price per liter	1
AI services	• Reduce cost, provide quality semen and proper insemination timing	4
Small land size	• Reduce number of livestock	5
<i>Men</i>		
Diseases	• Trainings and hygiene	5
High cost of production and quality of feeds	• Farmers to team up and make concentrates in groups	4
Breeding	• Need genuine service providers, especially AI	3
Low milk prices	• Cooperative to increase milk prices for farmers to benefit	1
Small size of land	• Lease land to grow forages and reduced herd size accordingly	2

Intervention ranking from the tool

The five top-most for women and men include:

<i>Women</i>	<i>Men</i>
❖ Supplementation with energy rich supplements e.g. molasses	❖ Grasses for cut and carry- there are options that can fit under this recommendation: including Panicums cultivars, Cenchrus purpureum, Urochloa- cultivars and hybrid
❖ Irrigated fodder production-grasses, maize sorghum	❖ Irrigated fodder production-grasses, maize sorghum
❖ Grasses for cut and carry- there are options that can fit under this recommendation: including Panicums cultivars, Cenchrus purpureum, Urochloa- cultivars and hybrid	❖ Short duration- annual fodder crops e.g. oats, maize, sorghum, vetch
❖ Protein supplementation e.g. from legume leaf meals, fish meal, oil seed, poultry litter	❖ Supplementation with energy rich supplements e.g. molasses
❖ Use of cereal by products e.g. rice bran, maize , wheat etc.	❖ Fodder trees and shrubs

Conclusions

For either women or men, responses on most cropping activities, landholdings and household incomes were similar. However, some differences emerge that could be attributable to the actual gender that implement those roles. For example, on crops grown in the areas, men take it tea precede any other crop while for women is maize. These crops may be contributing more to either gender incomes respectively. Men viewed maize more as a fodder crop while women as food crop. Women therefore perceived Napier grass as the most utilized grass for fodder and men maize. It is likely men were also taking into consideration the maize residues and green maize for fodder that happen in the area. It is noticeable only women who mentioned Brachiaria and oats as part of fodder likely meaning they are involved in growing and use of the same for livestock feed. No wonder, women perceived cultivated forage at a higher rate than that of men. Also use of collected fodder was high by women as they are most likely involved in the collection but when it comes to purchasing feed, men step in. In the end therefore, women thought more income in the household was from livestock and men cropping and this may represent the source of most incomes by gender. From the

women and men, were at convergence on need to improve forage production and higher milk prices would be preferable. Synthesis from the FEAST tool interventions highlight the need to increase forage production especially for cut and carry systems and especially to improve energy and protein sources. These insights would help in efforts to address livestock improvement in the area.

Reference

Lukuyu, B., Eerdewijk, A. Van, Kinati, W., Sultana, N., Mulema, A. and Duncan, A. 2019. Gendered Feed Assessment Tool (G-FEAST) focus group discussion guide. Nairobi, Kenya: ILRI.