

Story in the watershed

Towards Banning Free Grazing Through Pasture Land Management: The Case of Three Micro Watersheds in Amhara Region

1. Introduction

One of the major causes of land degradation is poor livestock management related to free grazing approach. Grazing is the main feed source for livestock in RLLP watersheds where grazing lands are usually communally owned. Livestock population pressure and increasing of crop land expansion affects availability of grazing land. As a result, the community has forced to send livestock to more fragile land neither suitable for grazing nor with enough feed. Forage/fodder production is a solution for sustainability of land management interventions through proper pasture land management and development.

According to the farmers in the assessment area, for farming purpose including milking cows, in previous times a farmer had an average of 7 cattle's but keeping all the livestock in a limited pastureland all year round. However, due to low carrying capacity of the grazing area, free grazing was the common practice with negative effect on treated landscapes. To minimize the pressure on grazing land and ultimately to ban free grazing, increasing carrying capacity of pasture lands by implementing pastureland

management interventions like applying moisture harvesting physical structures, enriching pasture lands by planting or broadcasting valuable/quality forage species are the main activities implemented by RLLP. Moreover, forage development from bio-physically treated landscapes like area closure, gullies and planted forage species to stabilize bunds has also supported households to access feed for their livestock. RLLP has also promoted rotational grazing on pasture land and stall feeding through cut-and-carry system from enclosed areas, forage species planted for bund stabilization, backyard forage development and using agroforestry shrubs and trees that enhance the availability of fodder for livestock.

RLLP has made a great role on providing awareness creation, technical skill enhancement trainings and experience sharing visits on approaches and interventions appropriate for feed availability based on local context of the community in addition to providing planting materials support. This case story assessment was conducted in sample micro watersheds to review the potentials of pasture land management towards banning free grazing in

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RLLP watersheds and to document growing experiences for up scaling.

2. Methodology

Among others, successful experiences on pasture land management were achieved in three woredas of RLLP namely; Bibugn, Basoliben and Debay Tilat Gin in East Gojjam zone of Amhara region. The three woredas have the same land use systems with Dega and Woyna Dega agro-ecologies and largest share of the land is farmland covered with annual crops like teff, maize, wheat and barley. This indicates that farmer's needs to have considerable amount of livestock's to support farming activities like plowing, crushing and others. Field visit was conducted in three micro watersheds including discussion with community in September 2021 as indicated in Fig-1 below.



Figure 1: Discussion with selected members of the beneficiaries, Dildy micro watershed

3. Findings

Case 1: In Bibugn woreda, Belman micro-

watershed, 4 ha Nacha wonz pasture land were managed since 2015 by 31 Households (2 female). The 4 ha was divided in to two blocks (2 ha each) to harvest on rotational basis and the block has shared equally for all the beneficiaries in each harvesting season with plot size of 4m*160m (640 m²/HH). Based on the bylaw agreed by the community, specific time of harvest was scheduled and cut - and carry approach was applied so that each farmer can harvest his/her share either to feed his/her cattle or sale. As a result, fattening become a good experience and an alternative income generating activity for households in Belman micro-watershed. The figure below showed harvestable pastures and harvested plots in September 2021.



Figure 2: Plot of harvested pasture land for a HH

In addition, farmers in the micro-watershed by themselves have designed their own de-stocking approaches without affecting their farm activities in order to manage demand of feed and carrying capacity of available

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pasturelands. Instead of keeping large number of cattle throughout the year, they found that it's better to have limited number of cattle periodically during active farming period. According to the experience, a farmer needs two oxen for plowing that took an average of 3 months (May-July) to complete tilling and related operations. Then immediately, took them to fatten for following three months (August- October). With better management, average benefit of Birr 5,000.00 earned from single cattle (30,000.00 per annum with such a system). Moreover, the time invested for herding becomes effective production hours for farmers by engaging themselves in alternative income generating activities.

On the other hand, beneficiaries who do not have cattle can sell harvested grass from the pasture in 1000 birr/Quintal which can earn 4000 birr/annum/individual. The benefit that is achieved through fattening has inspired those

who have no cattle's, especially women HH to engage in fattening.



Figure 5: Fattening, pasture land cut and carry as feed source in Belman Micro-watershed, September 2021

Each household in belman micro-watershed has prepared cattle traffs serving 3-4 cattle's and other livestock's like donkeys, sheep and goats are managed in backyards in a restricted feeding place. To know the contribution of the pastureland for feed availability for those 31 households, inventory of total livestock of those users was taken to analyze feed availability and total demand for that specific site is presented as follows.

Table 1: Total feed demand by livestock in Belan Micro watershed

S/N	Type of Animals	Total no. of animals	TLU Conversion factor	Population in TLU	Weight in kg (TLU*250kg)	Weight in tones	Daily intake/demand in DM (2.5%)	Yearly demand in DM (2.5%)
1	Cattle	79	0.7	55.3	13,825	13.825	0.35	127.8
2	Sheep/Goat	77	0.1	7.7	1,925	1.925	0.048	17.5
3	Donkey	30	0.5	15	3,750	3.75	0.1	36.5
	Total	186		78	19,500	19.5	0.48	181.8

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Total feed produced from this specific pastureland in tons per annum is about 187.5 tones with average productivity is 3 tone/plot with individual plot size is 640 m² or 46.8 tons/ha in two round harvest. This has contributed more than 100% of the total annual feed demand; where the site has bare because of free grazing before RLLP and average productivity expected was 2 tons/year which has contributed only 0.04% of total feed demand throughout a year. Some households have bought improved breed cows for milking to fulfill household nutrition as well as seeking additional income to their households. Feeding calendar is mainly dependent on dry and rainy seasons where additional green forages species like *Susbania sesban*, treelucern from backyard were available for its nutritional values. As a result, grass harvested from pastureland can be preserved as hay for dry season consumption.

This pasture land has managed in such approach since 2015 which showed good progress in increasing its productivity from year to year due to banning of free grazing and decreased physical disturbance. Neighboring areas treated in such manner have also changed to productive land. There are also signs showing how nature can treat itself if animal interference can be managed by humans. Below picture shows that soil degradation can be reclaimed itself if no

additional pressure is applied from humans/animals.



Figure 6: Gully vegetated by itself without additional inputs, Belman micro-watershed, September 2021 G.C

Bylaws applicability and sense of ownership:

Bylaws are necessarily initial factors for success for establishing fair use of communal resources in a community. Beneficiaries' of Nacha wonz pastureland has established their own bylaws in assistance with watershed committee in order to have fair benefit sharing as well as in place laws of actions acted to those violated the bylaw. Beneficiaries have assigned committee members and chairperson, reporter and casher to monitor and act based on the bylaws. Once beneficiaries know its income and environmental benefits sense of ownership was created and each individual in the community keeps like their own eyes (mentioned by one of the users) for its sustainability without need of fencing or guarding.

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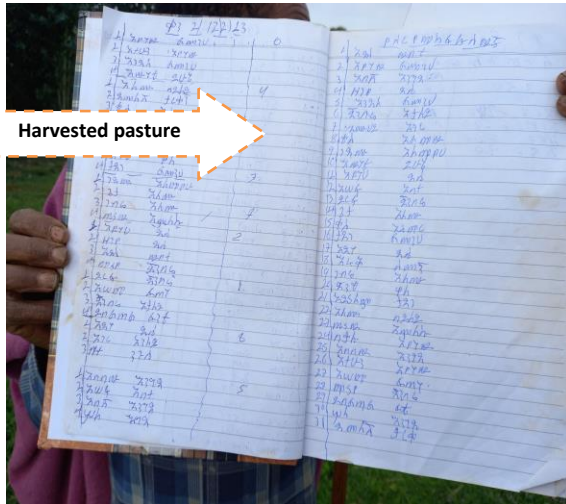


Figure 7: Pasture Benefit Sharing Documentation, Belman Micro watershed, September 2021

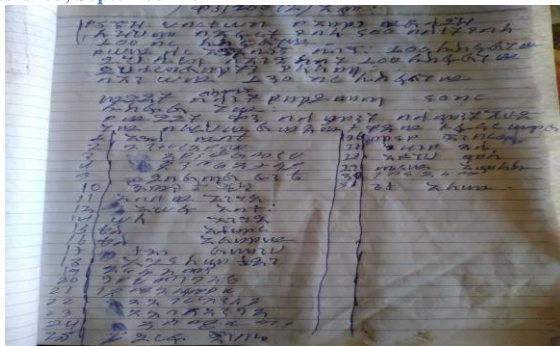


Figure 8: Bylaw of Belman pastureland management, September 2021

Case 2: Basoliben woreda is SLMP-II woredas which has reported five completed micro-watersheds by MTR. Bol micro-watershed is one of the candidate micro-watersheds to be completed in 2022. In the micro-watershed pastureland management is one of the interventions showing positive impact on livestock feeding habits, managing number of cattle in a household and ultimately towards banning free grazing. Yeda wonz pasture land management is one of the show cases applying in 10 ha of enclosed pasture land management

applied since 2016 which is managed by 114 HH (20 female).

As compared to Bibugne woreda, different approaches were applied during benefit/product sharing to address equal distribution and easy management of the benefit. Thus, the 114 beneficiaries divided in to groups of 10 members each. Each group has its own plots with 16m*150m plot size (2400m²/group). The pastureland is divided into two (5 ha each) for rotational harvest management and the group harvested 3 times per annum. Based on the bylaws established by the community, specified time of harvest was scheduled and cut- and carry approach was applied. Fattening became good alternative income generating option for households in Bol micro-watershed. The same de-stocking mechanism is applied in this community like in Bibugn woreda. Also high initiation of having improved cattle's is shown as the feed availability get improved through time.



Figure 9: Bol Micro-watershed Yeda wonz managed pastureland, September 2021

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To know contribution of the pastureland for feed availability for those 114 households, inventory of total

livestock of those users was taken to analyze feed availability and total demand for that specific site.

Table 2: Total feed demand by livestock in that specific site

S/N	Type of Animals	Total no. of animals	TLU Conversion factor	Population in TLU	Weight in kg (TLU*250kg)	Weight in tones	Daily intake/demand in DM (2.5%)	Yearly demand in DM (2.5%)
1	Cattle	1026	0.7	718.2	179,550	179.6	4.5	1638.4
2	Sheep/Goat	1254	0.1	125.4	31,350	31.4	0.8	17.5
3	Donkey	228	0.5	114	28,500	28.5	0.7	36.5
	Total	2,508		957.6	239,400.0	239.4	6.0	1,692.4

Bylaws applicability and sense of ownership

Bylaws are necessarily initial factors for success for establishing fair use of communal resources in a community. In consultation with the beneficiaries, management and use plan is prepared for this pasture land. Beneficiaries' of Yeda wonz pasture land has established their own bylaws in assistance with watershed committees in order to have fair benefit sharing as well as in place laws of actions acted to those violated to the bylaw. Beneficiaries have assigned committee members and chairperson, reporter and cashier to monitor and act based on the bylaws. Once beneficiaries know its income and environmental benefits sense of ownership is created and each individual in the community keeps like their own eyes (mentioned by one of the users) for its sustainability without need of fencing or guarding.

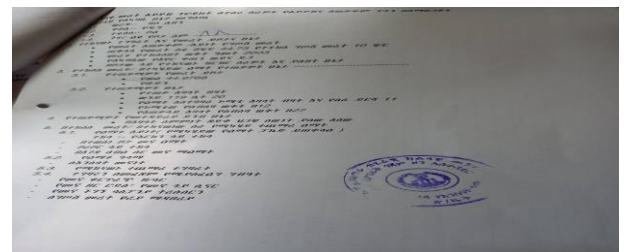
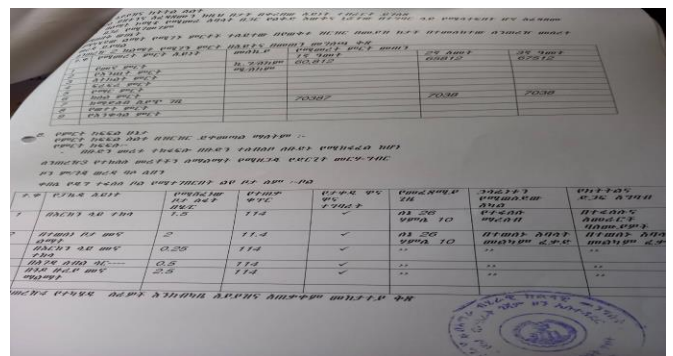


Figure 10: Management, utilization plan and bylaw of Yeda Wonz pastureland management in Bol MWS, September 2021 G.C

Case 3: Debay Tilat Gin woreda is also one of SLMP-II woredas in Amhara Region which has the major watershed Muga is started at the upper catchment of Choke- Mountain with very fragile landscape. Dildy in Muga major watershed is one of the micro-watersheds having good progress in applying SLM interventions in communal and farmland. In the micro-watershed pasture land management is one of

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the interventions showing positive impact on livestock feeding habits, managing number of cattle's in a household ultimately banning free grazing. Lay muga pasture land management is one the show case applying in 5.5 ha of enclosed pasture land management applied since 2008 E.C which is managed by 136 HHs / 17 female beneficiary households. The major problem in this specific site was availability of feed for animals, keeping large number of livestock's in small parcel of grazing land created overgrazing problems. To alleviate this, communal pasture land management practice is started in regular agricultural extension since the "Derg" regime but failed. With intensive technical trainings, awareness creation workshops and experience sharing visits to other woredas SLMP has shown us how degraded lands become productive. It shows us how to satisfy livestock's feeds and its returns with no/little investment in a short period of time.

Capacity development is the first move to lead for today's success. With close assistance of woreda TC the community has developed annual plan for each year based on the production capacity and feeding calendar of pasture land to equally benefit all the households.

Here, utilization approach is different from Basoliben and Bibugn woredas where both are applying cut and carry system. In Debay Tiltat Gin woreda, lay muga Pasture land, those 136 beneficiary HHs has divided themselves in to three groups based on proximity to the pasture land. The same division is also done for the pasture land (5.5 ha) based on number of beneficiaries per group. Based on the bylaws each group has splited its share of pasture land in to two, so that rotational grazing is applied. In those plots of pasture land only two cattle's (ox, cow or calf) per HH are allowed to graze for three hours per day. This will be applied for only two months in each plot. This helps to manage carrying capacity of pastureland as well as priority is given to cattle's to increase their productivity potential in a short period. Other livestock types are managed using other options like cut and carry from backyards, gullies, area closure, bund stabilization forages and hay.

The community has reflected positive impact of rotational grazing as improvements in productivity this pasture land due to animal impact on the land like nutrient recycling through feces and urine that could assure rotational grazing is a proven method of increasing the efficiency of pasture systems due to many reasons. Intensively managed rotational grazing systems have the potential of maintaining pastures

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in a vegetative state for most of the growing season.

This can be supported with the use of stockpiled pasture and stored forage, the possibility of year-round forage finishing of live-stock becomes more feasible in managing feed demand of livestock's of beneficiaries.



Figure 11: Enclosed pasture land in Debay Tilat Gin woreda Dildy MWS, lay muga pasture land, September 2021 G.C

To know contribution of the pasture land for feed availability for those 136 households, inventory of total cattle's (which the only livestock category allowed to graze on the enclosed pasture) of those users was taken to analyze demand- supply balance. Based on the bylaws, each HH has allowed grazing 2 cattle's, so that total cattle's allowed to graze on 5.5 ha of pasture land is 272. Estimated productivity of the pasture land is 10tons/ha/year with total productivity 55 tons/ year. This can cover feed

demand of cattle's for only 45 days (53.55), where cattle's are managed to graze in this pasture land for only 45 days in a year. Only 12% contribution from annual demand, but taken us good startup for the new approach 'paddock' system.

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Table 3: Total feed demand by livestock in that specific site

S/N	Type of Animals	Total no. of animals	TLU Conversion factor	Population in TLU	Weight in kg (TLU*250kg)	Weight in tones	Daily intake/demand in DM (2.5%)	Yearly demand in DM (2.5%)
1	Cattle	272	0.7	190.4	47,600	47.6	1.19	434.35

Bylaws applicability and sense of ownership

Bylaws are necessarily initial factors for success for establishing fair use of communal resources in a community. In consultation with the beneficiaries, management and use plan is prepared for this pasture land. Beneficiaries' of lay muga pasture land has established their own bylaws in assistance with watershed committees in order to have fair benefit sharing as well as in place laws of actions acted to those violated to the bylaw. Beneficiaries have assigned committee members and chairperson, reporter and casher to monitor and act based on the bylaws. Once beneficiaries know its income and environmental benefits, sense of ownership is created and each individual in the community keeps like their own eyes (mentioned by most of the users) for its sustainability without need of fencing or guarding.

4. Lessons learnt

- With relatively low investment cost, reinforcement of pastureland management reduces erosion, improves ground cover and

increasing infiltration rates as well as providing increase productivity of forage for cut and carry system. This brings positive impacts on facilitating towards stall feeding.

- Context approach of de-stocking is good alternative to manage pasturelands, increase feed availability and balancing feed demand–supply so that soil degradation can be reduced or no more be a problem because of free grazing/ over grazing,
- Sense of ownership is the key success for sustainability of interventions.

References:

1. Alemu yami. 2016. Forage Production: reference and training manual for Ethiopia,FAO,
2. Mr. Alan ROBERTSON.2016. Report on improved fodder and forage production. MoA,

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