

Re-vegetation of Gochar Lands

for Fodder Production through Dairy Cooperative Society (DCS)

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Proper scientific management by integration of feed, fodder and fuel crops in best way can enhance the productivity of village common lands or Gochar lands by 30%. Land development work needs to be done in order to make these lands cultivable and fencing ensures protection from stray animals. These lands are best managed by village institution (Gram Panchayat/ Dairy cooperative society) itself by producing fodder and selling it to landless or marginal dairy farmers at nominal price. It boosts the economy of rural areas by providing employment through dairying business by increasing the membership of dairy society and greater market access to all segments of society. Along with monetary benefits it also ensures environmental stability by plantation of trees at boundary. Such kinds of model need to be replicated at larger scale for better realization of benefits.

Key words: Common lands, Dairying, Economy, Landless farmers, Marginal farmers

FODDER is an important component of animal ration and its adequate availability is essential to fully exploit the genetic potential of the animals. Despite the fact that green fodder is economic source of macro and micro nutrients, its availability is a limiting factor for the growth of dairy industry. The status of permanent pasture and common grazing lands in our country is deteriorating due to huge grazing

pressure, lack of adequate institutional arrangement and encroachment of land. In India, 10.24 lakh ha lands is under permanent pastures and other grazing land as reported by Directorate of Economics and Statistics, Ministry of Agriculture and Farmer welfare during 2012-13. With increasing demand of feed and fodder, it is necessary to take up an integrated approach to re-vegetate land with cultivated fodder crops,

grasses, trees, shrubs under silvi-pastoral/ horti – silvipasture system to improve overall productivity of such land. Scientific management of these lands will produce substantial amount of feed resources.

In Fodder Development Programme of National Dairy Plan-I (NDP-I), Sabarkantha Milk Union (Sabar Dairy), Himmatnagar district of Gujarat has developed 20 ha of common grazing land (gochar land)



Developed Gochar land



Biomass Bunker (Fodder bank) at Gochar land

for the production and sale of good quality fodder and established 3 biomass bunkers for storage of surplus fodder/crop residue. For the re-vegetation of gochar lands, ₹ 0.50 lakh/ha and ₹ 10 lakh for the construction of Biomass bunker is allocated under Fodder Development sub-project, NDP I. The outline of these activities has been prepared to provide fodder to the milk producers at a lower price during deficit period by increasing the availability of quality green fodder through developing grassland/barren land and fodder storage in biomass bunkers. Gochar lands are normally managed by Gram Panchayat in villages. These are basically open land left for free grazing for all animal rearing communities. Over the passage of time, negligence, over-grazing and lack of financial along with technical support have reduced fodder production capacity of these lands. However, under NDP I, due to technical and financial support to DCS through milk unions, some of these gochar lands were scientifically developed and managed by village based Dairy Cooperative Society (DCS), which improved fodder production and developed an ideal model for their improvement, which may be replicated in other parts of country where dairy cooperatives are functional.

Implementation process of the activity in Dantrolli DCS

Dantrolli village is situated 12 kms from Taluka Vadali and 45 kms from district Himmatnagar. This village

has Dairy Cooperative Society (DCS) having 400 producer members, of which 200 belong to OBC and 70 SC/ST category. The average animal holding is 4-5 animals per household. DCS collects around 1000 litres milk per day. Village is situated in the hilly area with undulated topography and scanty of groundwater. To earn their living, farmers are into livestock rearing from many years and dairying is the main source of survival in this village. But the profit margin in dairying is very less because green fodder is not available for feeding animals. Farmers are purchasing dry fodder from outer source which is very costly and increases the burden on farmer's pocket.

Gochar land development work

Under NDP I, fodder and field officers were trained to implement sound fodder development programme. Latest scientific information for fodder cultivation and re-vegetation of commons land (gochar) provided to these officers, which helped them to start field level activities. In this case, the land selected for re-vegetation was situated in the hilly area was quite sloppy with undulated rocky hard surface and full of unwanted vegetation's. The land was idle for many years, so the development work in order to make the land fit for cultivation was a major challenge for the Sabar dairy. But the hard work, dedication and cooperation of DCS members and technical support from the Sabar dairy took this challenge as an opportunity and developed 10

hectares of land. Heavy machineries, JCB, Ploughs, levellers were used for 411 hours to remove dense vegetation, shrubs, obstacles, soil cut and fill work, to convert the steep slopes into flat land and make fit for cultivation. Apart from ₹ 5.0 lakh grant from NDP-I, DCS itself has invested ₹ 2 Lakh for fencing work around 10 ha farm to protect the crops from wild animal's attacks. To improve the fertility of the soil, manure was collected from local farmers and mixed with the soil in the farm. An open well situated in the farm is being used for the irrigation and connected with the large and deep trenches to collect the rainwater during monsoon. Underground pipes have also been laid down in the 10 hectares for irrigation facility. To manage the activity a separate committee was formed by village DCS. For proper storage of dry fodder in village, a biomass bunker (Fodder Bank) with the storage capacity of 50 ton was also constructed with the grant support of

Table 1. Expenses occurred on development of Gochar land and fodder bank

Particulars	Amount (₹ in Lakh)
Land preparation and levelling	2.75
Wire Fencing for protection	2.25
Underground irrigation piping and hydrants	1.00
Use of pond soil for land improvement	0.96
Water reservoir channel	0.15
Construction of Biomass Bunker (Fodder bank)	10.00
Total	17.11



Fencing of Gochar land



Cultivation of hybrid Napier grass



Fodder harvesting at Gochar land



Beneficiary Shri Suresh Bhai

₹ 10 lakh from NDP-I Table 1.

Fodder cultivation and sale

Soil in Dantrolli village is suitable for the cultivation of fodder crops like sorghum, Bajra, cowpea, hybrid Napier. Seeds and planting material of fodder crops i.e. cowpea, moringa, guinea grass, hybrid Napier (BNH-10) were provided from fodder demonstration unit, NDDB, Anand. Farm area was divided into various plots for sowing of fodder crops. In around, 1.5 acres of Gochar land, hybrid Napier grass was sown as a perennial crop. Apart from this, three acres of land have been divided into 35 strips (Pariya) for the sowing of local sorghum variety Sundhiya. Fodder bajra variety Rajka Bajri was sown in eight acres and fodder trees like subabool, moringa planted in some part of the gochar land. DCS is managing the whole activity and fodder sale from the gochar land. For the sale of green fodder DCS has adopted auction method. In this method an auction has been conducted every year by the DCS for the hybrid Napier plot and strips of the land. Surplus fodder was converted into hay and stored in the bunker by making bundles. In 2016-17, the hybrid Napier plot of 1.5 acres has been auctioned in ₹ 7,500 and ₹ 6,000 in the 2017-18. Due to draught condition in the 2018-19 hybrid Napier plot was not auctioned. In this way, 10 acres of land was divided into strips (pariya) and provided to the farmers after auctioning. In 2016-17, the highest

auction price per strip was ₹ 1,500 and minimum price was ₹ 1,000 according to the location of strip, water availability etc Table 2. The price of the pariya varies yearly according to the monsoon.

During the monsoon, surplus fodder from the gochar land is stored in the bunker by making bundles and sold to the farmers during deficit period. Earlier farmers are purchasing dry fodder bundles at ₹ 10-12/kg during the lean period, but after the construction of fodder bank in the village, dry fodder is available at ₹ 7-8/kg. For account management, a register has been maintained by the DCS which includes name of farmer, no of strips and amount per strip. The income generated through the sale of fodder has been used for the land preparation and maintenance works of the gochar land.

Benefits of the Gochar land

1. The availability of fodder has increased and farmers are getting enough fodder for their animals in the village.
2. The DCS is providing fodder at very reasonable rate, so in the

future, it will be a good step for increasing the membership in the DCS.

3. This activity has a positive impact on milk production. Presently the DCS has 200 active members and according to secretary of the DCS, milk procurement has increased and the total milk procurement is 1600 litres per day.
4. Due to the construction of biomass bunker, farmers are getting fodder at reasonable price during deficit period
5. Farmers are also encouraged to start dairy farming and earn profits.
6. Employment generation: Fodder cultivation activity on gochar land also lead to employment generation for village manpower. In this case, around 10 to 15 workers were employed seasonally for carrying out sowing, weeding, irrigation and harvesting activity for 60 days as and when required. One worker was given regular work for supervision of farm management work. So we can say that gochar land development not only help in increasing fodder production but also employment generation at village level.

Table 2. Year-wise expensed in fodder cultivation and sale on Gochar Land

Sl. No.	Year	Income from fodder sale (₹)	Expenses in fodder cultivation (₹)
1	2016-17	50,000	70,000
2	2017-18	70,000	100,000
3	2018-19	105,000	117,000
	Total	225,000	287,000

Future interventions

1. Sowing of good variety of cereal and legumes fodder crop on the developed gochar land and provide fodder to the farmers at a reasonable price.
2. To produce good quality fodder seed along with fodder

production. With the use of good quality seeds, 30% more fodder production can be taken.

3. To cultivate fodder trees (Moringa, Augasthi, and Ardu etc.) on ridges as an alternate fodder source.
4. Production of green fodder throughout the year by cultivating perennial fodder crops by water conservation.

Programme sustainability

The purpose of this activity is to provide quality fodder to the producers at reasonable prices. So far, the Secretary of Milk Committee and the fodder officer of Sabar milk union look after the management of the gochar land. Whenever required, the committee manages the workers. All records regarding expenditure and income are maintained in the register by the committee. The income generated from the activity is constantly being used for land

improvement, sowing of crops and manuring of land to maintain soil productivity.

Farmer's views

From the past few years, Shri Sureshbhai is engaged in dairy farming for the survival and keeping 12 milking animals. He owns 4 acres of cultivable land, of which, 1 acre is utilised for green fodder. But this fodder is not sufficient for the animals. In order to provide sufficient quantity of fodder, he has to buy fodder from outside market, due to which cost of milk production increased and profit margin decreased. But since the gochar land has developed in the village, he is getting green fodder at reasonable price. During the auction, he got a strip of land ₹ 1500 for a year. Now he gets enough green fodder for the animals. Due to the construction of biomass bunker in the village, he gets dry fodder during the deficit period at

a very cheaper rate than market. This year he purchased 500 bundles of 2 kg each of dry fodder in ₹ 12 per bundle. Farmers are very happy and benefitted through the gochar land development and Fodder Bank in the village.

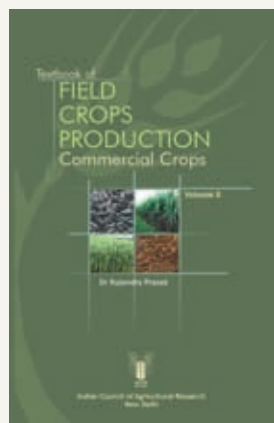
Gochar Land development under NDP-I

In similar way, Sabar Milk Union has developed 5 hectares of gochar land in each Hajipur and Dhansura Village. Fodder crops like Sorghum, Oats, Bajra have been cultivated in the gochar land. When the crop gets ready for harvesting they provide strips to the members of the society at a very nominal price. The funds generated through fodder crop sale are used for the maintenance of gochar land.

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