

RASHTRIYA KRISHI VIKAS YOJANA
GOA STATE CO-OPERATIVE MILK PRODUCERS' UNION LTD
Curti Ponda -Goa -403401

SUCCESS STORY

GREEN FODDER SEED BANK



RASHTRIYA KRISHI VIKAS YOJANA
GOA STATE CO-OPERATIVE MILK PRODUCERS' UNION LTD
Curti Ponda -Goa -403401

SUCCESS STORY:

GREEN FODDER SEED BANK

The dependency of rural poor on livestock for their livelihood is quit substantial and this situation is likely to continue for the year to come. Among livestock, dairy cattle play a pivotal role in the livelihoods of the poor people especially those who are poor not only in land assets but also in literacy, access in infrastructure facilities, information and basically unskilled. These rural poor had no option but to take up dairy farming as a main occupation as it is the only enterprise which could provide regular income (Milk , Money) serve as asset (moving bank). Dairy farming forms the second or third largest economic activity in the country. Dairy farming basically a crop inside based enterprise is slowly getting transformed in to external input based system where in the dairy farmers have to depend upon purchased in puts to rear cattle.

The importance of feeds and fodder in dairy farming needs no emphasis. With increase in the pressure on land due to urbanization and industrialization and decrease in the area under food crops coupled with increasing demand for milk and milk products the dependency on external or purchased inputs is increasing concomitantly putting pressure on the dairy farmer especially the resource poor. Efforts are being made to reduce the yawning gap between the requirement and availability of feeds and fodder which include technological interventions to increase the yield, bringing more area under fodder crops, conservation of feeds and fodders, improving the nutritive value of poor quality roughages, formulation of balanced rations, feeding of unconventional feeds etc. but "fodder scarcity" is a challenging reality in most of the state including Goa.

ISSUES TO BE ADDRESSED AT LARGE IN STATE OF GOA

- 1) Increasing demand for milk and milk products in the state.
- 2) The issue is how to protect the interest of the poor dairy farmers and keep pace of increasing the milk production.

- 3) Scientific feeding practices in dairy animals there by reducing the cost of milk production.
- 4) Utilization of waste and barren lands for fodder production to encourage dairy business on large scale.
- 5) Importance of green fodder in supporting profitable dairy venture in terms of milk, fertility and health of the milch animals.
- 6) Present requirement of green fodder is 2000 MT / day against availability is 500 MT / day

NEED OF GREEN FODDER SEED BANK IN THE STATE

Dairy farmers were in practice of cultivating the green fodder varieties like Napier available with the various agencies like Dept of AHVS, ICAR , KVK etc. There was no systematic approach to find appropriate seed material suitable for the region and will yield higher production to make the enterprise economically viable. Following constraints were brought to the notice by the dairy owners to have systematic green fodder production.

- ❖ Land holdings were too small to take up large scale green fodder cultivation
- ❖ No good quality seed material was available as per the demand and time.
- ❖ Lack of awareness on yield, palatability, nutritive value of the fodder.
- ❖ Source of seed material, availability and usage.
- ❖ Difficulties like availability of farm equipments like tractors, tillers, laborers, farm yard manure, Irrigation facility, fencing etc.
- ❖ Financial support to have mechanized green fodder cultivation.
- ❖ To established fodder seed bank for the state.
- ❖ Destruction of fodder by wild animals.

With above issues it was proposed that 100 Ha land shall be brought under cultivation of green fodder in the initial phase of project proposal from 2009-12. This would serve as "GREEN FODDER SEED BANK" to meet the fodder root slips requirement of quality green fodder variety (initially root slips required for under taking green fodder cultivation by the agency engaged for the purpose shall be met by procuring the same from Dharwad Agricultural University Dharwad and

other known reputed institutions.) However from our past experiences it was observed that sufficient quantity of root slips at the required time was not available on regular basis from Dharwad Agricultural University. In order to remove the practical difficulty of availability of fodder root slips it was proposed to establish "FODDER SEED BANK" in Goa itself under RKVY funds .This will enable us to provide fodder root slips required for bringing 2000 Ha. Of land under green fodder cultivation till 20017 and there after. Basic objective was to avoid huge transportation cost from Dharwad to Goa and also the higher cost of fodder rootslips sold at Dharwad .(Rs 50 / Hundred rootslips, and Rs 5000 /- one pickup load of rootslips carrying 10000 nos.

Goa State Co-operative Milk producers' Union took the lead role to undertake the pilot project of Fodder Bank with the help of Dept of Agriculture Govt. Of Goa and RKVY Govt. of India. Simultaneously actual cultivation of green fodder was initiated by bringing the 400 Ha. Of land every year during next 5 years. Thus total land under green fodder cultivation would be 2000 hectors which is capable of providing round the year green fodder to 30000 cattle and buffaloes population including the calves, growing stock and the adults. It was assumed that 2000 Ha. Cultivated land under green fodder shall provide (2000 X 300) 6 lakh labour days employment which means that direct round the year regular employment to nearly 2000 males and females from villages in Goa annually. The benefits from reduced cost of Milk production by utilizing the mass cultivated green fodder is expected to be Rs. 11 crore annually from an area of 2000 hectors of land yielding 2.30 lakhs MT of fodder .This will indirectly help to reduce the cost of production by Rs 2 /- litre when the milch animals are fed with 20 kg of green fodder daily on regular basis. Thus the total direct benefits by reduced cost of production during the above seven years would be in crores alone.

SELECTION OF SEED MATERIAL

Majority of green fodder cultivators were cultivating Napier variety (Coimbotore) CO1, CO2, & Yeshwant . It was observed that yield was considerably low compared to CO3 variety. Yeshwant variety had high estrogenic effects thus by the milk producers. Hence to overcome this issues an alternative solution of selecting

other varieties like CO3 and CO4 was explored. Few farmers had CO3 variety and had better performance as compared to other varieties already grown by them. After due consultation with Agricultural Universities at Dharwad , Coimbatore , ICAR Goa , it was suggested for CO4 variety Napier X Bajra hybrid (Pennisetum Glaucum X Pennisetum Purpureum) variety was considered for Fodder Seed bank for following reasons

- N-B hybrids are highest green forage yielder in a unit of time and space.
- Varieties are vigorous, nutritious succulents, palatable.
- They respond to heavy nitrogenous fertilization.
- Leaves are soft broad and highly palatable.
- Biomass generated is higher than other varieties.
- Sustainability in the soil for longer period of 3- 5 years.

CO3 Variety Seed material was collected from ICAR Goa and other milk producers who had grown the fodder. CO4 variety seed material was purchased from Coimbatore Agricultural University Coimbatore.

SELECTION OF BENEFICIARIES

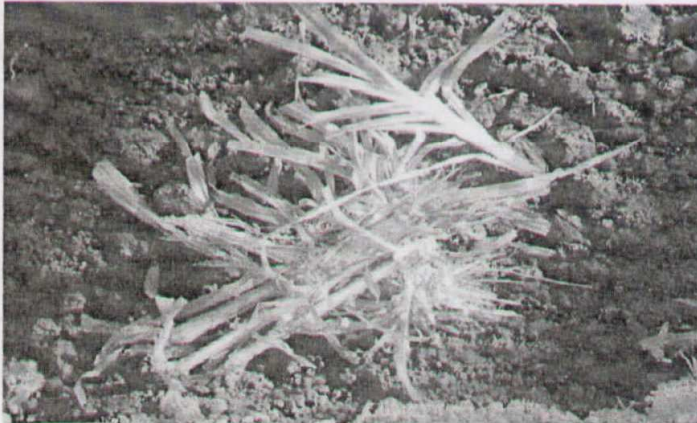
Milk producers and other land owners were selected for Fodder Bank through the Dairy co-operatives Societies. 16 members undertook the cultivation of green fodder under Fodder Seed Bank. As per the need of cultivators financial assistance was made available through Local Dairy Co-operative Society to have proper distribution of fund and monitoring of the cultivation and production of seed material. Finance was made available to beneficiaries for plot preparation, fencing, farm yard manure, ploughing , transportation of seed material and farmyard etc. As the financial assistance was provided through DCS it brought awareness and confidence to the cultivators to undertake the activity by themselves. Necessary demonstration of cultivation practices were given to the beneficiaries in ICAR, Dept . Of AH VS. and Agriculture Dept. farms.

SEED MATERIAL

Two type of seed material opted for cultivation

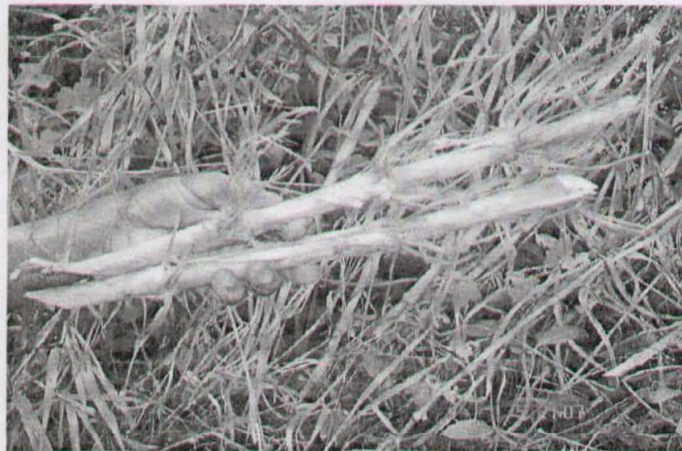
- 1) Root slips two no
- 2) Stem cutting with two nodes

Rootslips



Rootslips were more advantageous for early growth and rooting of the stem in the soil.

Stem Cuttings



Stem Cuttings with minimum two nodes found to be slow to grow and took 6-8 days to have first leaf at the base.

CULTIVATION PRACTICES

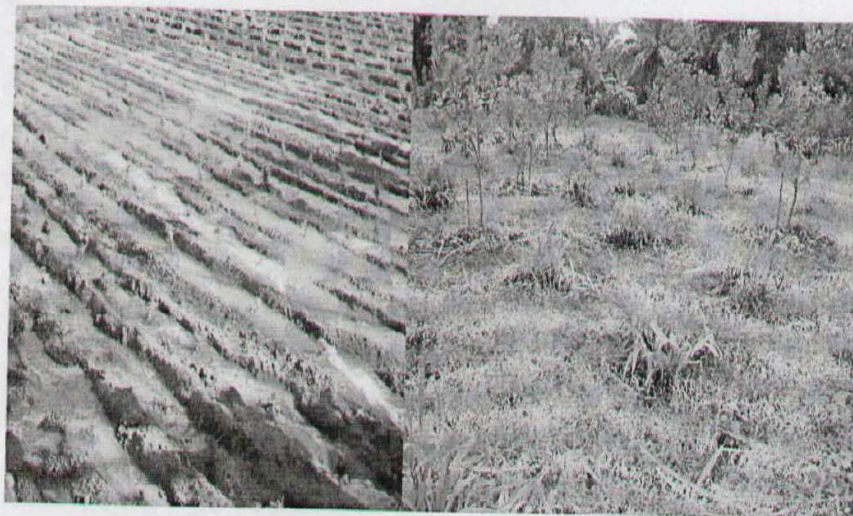
In traditional method cultivators made soil ridges of one ft width and 0.5 ft depth where in two rootslips or stem cutting with two nodes was planted at depth of 3-5

cm on one side of the ridge at 60 X 30 cm spacing at the rate of 35 - 40,000 rootslips /stem cuttings /Ha. Pit methods was also tried at few places with 1 ft X 1 ft X 1ft and 0.75 mt spacing between each pit with one sapling / pit.



Selection of seed material before planting.

Cultivation methods



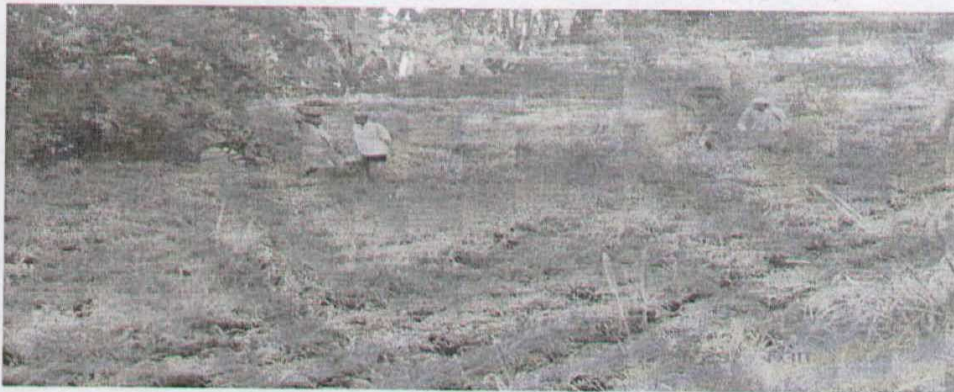
Ridge Method

Pit method



Growth in Ridge method

Pit method



Manuring with farm yard manure



Organic compost with earthworm



Water Management



Fodder growth of 55 days. (Pit method)



C04 Variety growth 55 days (Ridge method)



Fodder ready for root and stem seed collection



Solar fencing to protect fodder from wild animals.



CO4 -Demonstration to State Planning Commission officials and farmers

OBSERVATIONS

Sixteen milk producers have undertaken the fodder cultivation in 25 Ha. of land and have succeeded in production of average 4 lakh seed material / Ha. From this seed bank 84 lakh seed saplings were made available to the beneficiaries to cultivate fodder in 438 Ha. of land under mass scale Green fodder Cultivation programme. Following observations were made at farmer's level for variety of seed material.

Sl no	Particulars	CO3 Variety	CO4 variety
1	Root slip growth	Sluggish	Active with many roots
2	Stem with two nodes growth	Sluggish	Fairly good
3	Cultivation practices -Ridge method	More saplings required	More saplings required
4	Pit method	Less saplings	Less saplings
5	Quality of fodder Leaves	Narrow with spikes	Broad smooth to touch

6	Stem	Sturdy thin more fibrous	Thick , soft in nature with more leaves
7	Height of the fodder	1.75 -2 mt.	2 to 2.25 mt
8	Yield of seed saplings No / annum	2.8-3 lakh / Ha.	3.5- 4 lakh / Ha.
9	No of shoot saplings / ridge /mt	25- 35 No	30 -45 No
10	No of shoot saplings / Pit	30-40 No	45-60 No
11	Fodder Yield / Year / Ha.	180 – 190 MT	210 -220 MT
12	Sustainability to Goan soil	Requires more water to achieve maximum yield	Less water requirement and propagation is faster.
13	Fodder palatability by animals	Requires chaffing	Animals consumes withought chaffing

LESSON LEARNT FROM CULTIVATORS

- Cultivators are reluctant to cultivate the fodder exclusively for seed production.
- Without initial financial support dairy owners hesitate to under take fodder production on their own cost.
- Initial investment for fencing to protect fodder cultivation is real burden on cultivator.
- Maximum usage of available farmyard manure exclusively for fodder cultivation is not followed by cultivators.
- Destruction of fodder plots by wild animals is major issue to be tackled by concerned agencies.

- Dairy owners are reluctant to purchase green fodder in rainy season as they prefer to procure locally available non nutritious fodder.

SUCCESS OF FODDER SEED BANK

With the support of Dept . Of Agriculture Govt. Of Goa , RKVY Central Govt. Of India and Dairy Co-operative Societies under Goa Milk Union we could achieve the desired results of Fodder Seed Bank in Goa State.

- ✓ Establishment of fodder seed bank in 25 Ha. Land
- ✓ Locally availability of fodder seeds round the year to the needy cultivators.
- ✓ Seed transportation cost and time saved.
- ✓ Establishment of new variety CO4 in the state.
- ✓ Assessment of fodder seed and fodder yield in the different varieties.
- ✓ Awareness about pit method of planting the green fodder amongst cultivators.
- ✓ Mass scale green fodder cultivation in state has boosted the milk producers to minimize the feeding cost in milch animals and milk production cost.
- ✓ Fodder production is income generating source to those who has no dairy enterprise.
- ✓ Indirect employment to all fodder cultivators and their family members.

The trends of decreasing land holdings and source of regular income of the agricultural farmers by cultivating green fodder are key factors for developing more interest towards dairy farming. The major constraints in profitable milk production are feeding of milch animals which contribute to 72 % in Goa. Hence green fodder production will play key role in declining milk production cost. Utilization of barren land for Green fodder Cultivation will bring major change in dairy sector. Seed bank established would serve the major source for Co4 seed material to needy farmer.
