

RASHTRIY KRUSHI VIKAS YOJAN
COST EFFECTIVE GREEN FODDER
PRODUCTION BY HYDROPONIC
TECHNIQUE



TALUKA AGRICULTURE OFFICER
KOREGAON, DIST. SATARA

Introduction:-

In Satara district Koregaon taluka comes under Dryland and rainfed area. most of the crop production depends on rain. Annual income of farmers in this area is comparatively low. So, that it is necessary to promote dairy based farming system in this area. To overcome fodder availability problem Hydroponic fodder production technique is unique and cost efficient than traditional fodder production method.

Traditional fodder production has a number of limitations regarding soil & climatic conditions. In successful milch animal rearing green fodder has its special significance. A suitable combination of green & dry fodder is very important for maintaining animal health & milk production. But in scarcity condition traditional green fodder production become impossible because of lack of irrigation water. In such condition the technique of green fodder production by Hydroponic method is very useful tool. With this technique, it is possible to produce green fodder like Maize ,Wheat, Bajra etc. This technique does not require soil. Hence limitations like saline soil, inferior soil, water logged soil etc can be easily overcome. This technique requires very less quantity of water. Hence it can be easily undertaken in scarcity affected areas.

GREEN FODDER NEED FOR CATTLE

Green fodder is the natural diet of cattle. Green fodder is the most viable method to not only enhance milk production, but to also bring about a qualitative change in the milk produced by enhancing the content of unsaturated fat,, Omega 3 fatty acids , vitamins, minerals and carotenoids. Hydroponics fodder growing is the state-of-the-art technological intervention to supplement the available normal green fodder resources required by the dairy cattle. But, after the unfortunate Fometa experience, Indian scientists and planners have not given any attention to this subject. With increased pressure on farm lands to produce increasing needs of food grains, providing green fodder by hydroponics fodder growing is a necessity for the Indian dairy industry.

Modern researches have confirmed that grass fed cow's milk is very rich in EFAs (Essential Fatty Acids). Omega 3 is the most important

constituent of grass fed cow's milk, particularly for brain and eyes. Some clinical studies indicate that a 1:1 ingested ratio of *Omega 6-* to *Omega 3-* (especially linoleic vs alpha-linolenic) fatty acids is important to maintaining cardiovascular health.

INDIA & HYDROPONIC FODDER

Indian agriculture scientists have been familiar with Hydroponics Fodder growing for more than 30 years. Govt. of India had in late 1980s imported half a dozen 'Fometa' Hydroponics Fodder devices for Indian research establishments of ICAR. It is also reported that 50 more Fometa device kits were imported and assembled in India.

Each Fometa occupied 30sq. mts. of space and was designed to produce, on a daily basis, 1000 kg of highly nutritious clean green fodder of more than 85% digestibility. These devices failed to be useful to India, because they needed air-conditioning to maintain a temperature of 22+/- 2 C. They used large numbers of fluorescent tubes for photosynthesis. With irregular electricity supplies, fodder could not be produced on a regular basis.

Capital cost of these machines was so large, and electricity operating expenses made the operational cost of these devices uneconomical to produce fodder. The attempt to use hydroponics for growing fodder in India was discarded as a bad dream; unsuitable and unaffordable in India.

The Objectives:

- To design a low technology rural device that can be the cheapest hydroponic fodder production system.
- To Reduce the operating costs by using natural sunlight for photosynthesis
- To Raise higher operating temperature range of these devices to at least 30degrees and
- To Eliminate air conditioning.
- To Utilize organic fungicides and growth promoters.

Activities conducted to promote hydroponics–

- ❖ computer aided training and awareness programme at Taluka and village level



- ❖ Village level expert guidance programme



2. Response -

Total 67 farmer from the taluka benefited from hydroponic unit Mr. Suresh Appa Shinde (Mob no. 9850112439) From Asangaon village attend training program conducted at Taluka agriculture office koregaon where he saw this technique for the first time. Then he decided to establish it on his own farm. He was properly guided by the experts of Agriculture department.

The seed of desired fodder crop like Maize, Bajara, Wheat or Oat is soaked in water for 12 hours. After which it is kept in gunny bag for another 12 hours. Then it is put in 72 plastic trays which are arranged on HDPE racks. The total production unit is covered with shade net structure. The size of plastic tray is 2ft. x 1.5ft x 3 inches. In each tray around 1 kg (dry weight) seed is put. The partially germinated seed is regularly sprinkled with water. For effective & uniform water application, sprinklers & timer assembly is used. The timer is useful for periodically switching on fogger. Within a period of 7 to 8 days, there is profuse growth of fodder which is ready for feeding to the animals. The technique has its utility because of high ratio of seed to fodder. One kg of seed can yield 8 to 10 kg of green fodder within limited time span of 7 days.

The green fodder produced from each tray is approximately 10 kg which is sufficient for 1 cow (here it is assumed that the animal is feed with dry fodder as per requirement.) Thus one tray is sufficient for one animal daily. Hence for a week one animal requires seven trays in rotation. Thus a farmer with ten cows will required 80 trays with him. the with proper planning and seed growth cycles from one unit 10 trays of green fodder can be available (around 100 kg green fodder / day)

This technique requires less labour because of the speedy growth & atomization done for irrigation. It is user-friendly & cost effective. It can be easily done by farmer. The cost of production of maize fodder works out to be Rs1.63 per kg

He was successful in erecting the necessary structure. The floor space of his project is of 80. He had used plastic trays, HDPE pipes structure, 1 HP electric motor, fogger and timer assembly for which he had incurred an expenditure of Rs. 25000/-.He was able to overcome certain difficulties & the smooth runing of the project. Under RVVY scheme he received Rs.6000/- grant for 1 unit. Now he have 2 hydroponic units and producing quality green fodder under kind guidance of Agriculture department.



Program Result –

Mr. Suresh Appa Shinde used 80 plastic trays in this project from which he is successful in obtaining 110 kg. green fodder per day. He is able to get 3300 kg of green fodder per month & 40 M.Ton per year. He has 3 cows and 2 bullocks with him this project helped him to reduced the cost on constricted animal feed significantly. Before this project he has been spending Rs. 16000 on concentrated feed which has now come down to Rs. 4000 per month.

More fodder production in limited space, lower water requirement, fodder production free from pests and diseases, more palatability are the characteristics of this project. It is possible to produce green fodder maize, wheat, bajara by this technique..

4. Program Impact -

Lot of farmers have visited to Asangaon 4 units, and Banawadi 9 units and took information about this project. The model of this project is displayed in various agriculture exhibitions for which there was good response from farmers

His farm has been serving as a training center regarding animal husbandry, hygienic milk production, hydroponic fodder production etc. This center also plays a role as Farmer-led Extension. It was supported from ATMA, Satara as a Training-cum Demonstration Center.



Since last eight months, about 200 farmers received quality training. In each training the trainee farmers got opportunity to do things by themselves, so that they can learn effectively. Large number of farmers visited this center. Some of them have started their own hydroponic units. This technique has a good potential of replicability.

After seeing the Hydroponic project at Asangaon, various farmers have established it on their farms.



Hon. DSAO and TAO visit to Hydroponic Unit



❖.Future Potential –

1. To increase milk production and quality of milk green fodder is very important.

To make more and more green fodder available trainings to farmers will be arranged on hydroponics with the help of ATMA.

2. Production of vegetables through hydroponics.

3. Organic milk production .

4. To promote Time and space utility in fodder development sector.

Benefits of hydroponic fodder production.

- Land preservation
- Water conservation
- Faster growth and maturity
- Contamination free
- Minimal use of Fungicide and Pesticide
- Less labor and maintenance costs
- Control over growing environment
- Time saving
- Continual produce
- Weed free
- Highly palatable & Nutritious fodder

Profuse growth of maize crop



Maize fodder crop with age of 8 days



Good growth of hydroponic maize fodder crop

TALUKA AGRICULTURE OFFICER KOREGAON