

# **Hydroponics: A revolutionised approach for sustainable green fodder production**

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## **I. Introduction:**

Our country has the largest livestock population in the world.

India is one of the highest milk producing country in the world since 1998, the productivity per animal is low as compared to the developed countries due to imbalanced and inadequate green fodder feeding. There is a big gap between productivity, demand and supply of green fodder.

Increasing population and shrinking cultivated land are the big challenge for food security and nutrition, this challenge can be faced by increasing milk production of animals. There is limited scope for expansion of land for fodder production and grazing management.

Green fodder intake can increase the milk or meat production by reducing cost of concentrate feeding.

It contributes to better reproductive and productive efficiency, improves immunity and all over health of animals hence green fodder is important part of nutrition of dairy animals.

There is a huge scope to promote the hydroponics technique for sustainable green fodder production. It has potential to meet the challenge of fresh green fodder feeding requirement for animals throughout the year.

However the green fodder availability is decreasing day by day, shortage of farm labour is another big problem, many parts of country is also facing the unfavourable climatic condition for fodder cultivation thus the hydroponics technique is the alternative and sustainable method for obtaining the green fodder. Dairy farmers and entrepreneurs are equipped to ensure quality of green fodder. This technology can be adopted and used in green house/poly house or under ordinary farm house conditions.

Keywords: Hydroponics, green fodder, milk production, livestock

## **Importance of green fodder:**

- Natural diet for livestock
- Provides essential nutrients, protein, vitamins and minerals.
- Primary source of beta carotene, helps in synthesis of vitamin A, which is important for health and vision.
- Greater impact on reproduction, production and immunity
- Reduce the cost of concentrates
- Lower the cost of milk production
- Increasing profits
- Green fodder is important component of sustainable dairy farming
- Improve fat percentage in milk

Microbes present in green fodder play a major role in its palatability and digestibility

## **Hydroponics system:**

This word has been derived from Greek word.

‘Hydro’ means water and ‘ponic’ means working.

The way of growing plant for crops in water without any soil under controlled environment.

In this method water is incorporated with well balanced nutrients essential for plant growth.

Cultivation of green fodder seed, water and sunlight are important input for production. Green fodder can be harvested after 7-10 days of plant growth.

For productivity of fresh green fodder from hydroponics seed of barley, oats, maize, wheat, cowpeas etc are commonly cultivated.

Hydroponics fodder production is the state-of-the-art technology intervention to supplement the available green fodder resources required by dairy animals.

### **Merits of cultivated green fodder by hydroponics:**

- Round the year production (free from pesticides, chemicals, fungal contaminations) irrespective of the failure of monsoon
- Less labour requirement
- Less time required for green fodder production (7-10 days to develop from seed to fodder as compared to 45 days)
- Less land requirement (uses 99% less land than conventional method )
- Less requirement of water (98% less than the conventional method and used water is recycled)
- Minimum usage of equipment and fuel
- More succulent and tasty green fodder for animals
- Highly nutritious and better quality, higher crude protein content(10-17%) along with seeds and roots
- Better palatability and digestibility
- Completely natural and organic fodder without use of any pesticides

### **Challenges of hydroponics:**

This technology has potential to produce fresh green fodder in short period, which can be adopted as a business model at commercial or local level under intensive and semi-intensive management system.

Can be used as a tool for sustainable fodder production but quality of seeds in adequate quantity is most crucial challenge.

Sprouting and contamination of seed is also a big challenge

However during the production of fodder, qualitative and quantitative aspects need to be considered.

### **Pre-requisites of hydroponics technology:**

- Growing trays
- Reservoir and nutrient solutions
- Submersible pump
- Air pump
- Delivery system
- The timer
- Light to grow plants
- Hydroponic machine
- Regular power and clean water supply
- Seed of good germination quality
- Good sanitation and hygienic condition inside and outside
- Avoid fungal attack and bleaching of leaves

### **Steps to produce:**

- Washing and cleaning of seeds
- Soaking of seeds in water
- Sprouting
- Traying
- Adjusting in machine
- Shifting of trays daily
- Fully grown fodder on 8<sup>th</sup> or 9<sup>th</sup> day achieved
- Harvesting

## **II. Conclusion:**

Hydroponics fodder production technique is an innovative alternate method which is gaining more importance for feeding of livestock for small, medium and landless farmers and youth. But it requires training and education, knowledge and skill from government and private institutions.

This technology improves health, reproduction, productivity and quality of milk, improving income and profit of farmers and youth.

It has greater effect on buffalo, goat, pig, sheep and poultry etc. It plays a major role in reducing green fodder demand and supply gap.

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