

Hydroponics Fodder Technique for Economical Milk Production

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Abstract : Dairy animals regularly requires green fodder with different nutrients for high milk production. Now a days, it's difficult to produce green fodder in large scale due to lack of land and labour. Dairy industry is only source to provide milk and milk products for a huge population. Hydroponics technology is the best alternative method for production of green fodder through low land, labour, water, electricity , limited protection and less time with high nutritional fodder.

Introduction : Production of green fodder with hydroponics technology is a need of dairy industry and milch animals due to lack of land for fodder production, lack of labor limited irrigation facility and holding capacity of farmers, but demand of fodder is very large. Cultivation of fodder by traditional farm method requires higher water, land, labour , time , different forming practices, protection of fodder land as compared to new technology of hydroponics fodder production. it is very suitable and profitable technique requires less time , area, practices labour cost, protection and less water.

By this technique farmers can produce different type of fodder like maize Jower, bajra, wheat, etc.it is so better technology to provide variety of nutritional fodder to milch animals, now a days.

Material and Method : Hydroponics technology for green fodder production requires plastic trays, a small green net shed and 1kg seed of barley, oats, jower , wheat as per requirement of farmers

Steps :

- 1) Take 1 kg of clean maize seeds
- 2) Soaking of seeds for 12 hours in water then change the water in next 12 hours this process of soaking seeds continuous for 24 hours.
- 3) Now take the soaked seeds on a clean floor
- 4) These soaked seeds slowly spread uniformly in plastic trays.
- 5) These plastic trays keep under the green net shed for 7-15 days.
- 6) After 7 days we can use this green fodder as per requirement of animals
- 7) Give water by small foggers, spray or by hand on this seed trays twice a day regularly
- 8) Fodder under this technique consists of grains , roots, stem and leaves as a fodder.

Importance of Hydroponics fodder production technique :

1. Green and valuable fodder : growing of green through Hydroponics is completely by natural source. No pesticides are used in green fodder production that could contaminate milk and milk products.
2. High milk production : by providing green fodder to milch animals it can compensate the concentrate feed so as to have economically viable milk producing industry.
3. Save Wasting Fodder : Green Fodder produced form hydroponics will be fully utilized as there won't be loss of the fodder during feeding as compared to wastages of chopped traditional grasses during donsumption by the animal.
4. Less time production : to obtain nutritious, fodder requires just over 7 days from seed germination to fully grown plant of – cm height. Biomass -conversion ratio is as high as 7-8 times to traditional fodder grown for 60-80 days.
5. **Availability round the year :** technology is capable to make provision for the green fodder round the year, as per demand. Constant supply can be organized irrespective of rain, storm, sunshine or drought.
6. **High nutritional fodder :** through gydroponics it is possible to enhance the nutritive value by adding additional growth promoters, nutrients, etc to have quality milk from the dairy animals.
7. **Save Water :** it requires just 2-3 liters of water produce one kg of lush green fodder, as compared to 60-80 its to conventional system of fodder production. Water left over in hydroponics is recycled to grow the fodder.

8. **Save Land Area :** Hydroponics green house requires marginal land to erect the system ie 10 mtsx 4.5 mts land for 600 kg green fodder / day/ unit, in comparison to one hectare land for conventional green grass field. Reduction in the amt of land required for maximum fodder production is an asset for both regions where agriculture is difficult and densely populated areas that lacks sufficient growing space.

9. **Save Labour cost :** In conventional fodder production requires continuous intense labour for cultivation to harvesting of the grass, but in hydroponics labour required is 2- 3 hours / day only.

Result & Discussion: Comparison Of Conventional Fodder And Hydroponic Fodder Production of Maize

Sr.No.	Component	Conventional Green fodder	Hydroponics Green fodder	Benefit on
1	Area	100000 sq.mts	50 sq.mts	Land
2	Fodder production in days (growth period)	60-70 days.	7 day.	Time saved on growth period.
3	Water and electricity requirement	Very high	7 day	Time saved on growth period.
4	Land fertility	Essential	Not essential	Saving on fertilizers
5	Fertilizers	Required	Not required	Saving on fertilizers
6	Fodder yield dependency	On climate rain, water, etc	In controlled environment	No dependency
7	Fodder utilization by animals	Partial	Complete	Reduction in fodder waste
8	Lobour requirement	More	Less	Saving on labour
9	Fencing and protection	Required	Not required	Saving on fencing cost
10	Fodder feeding practices	By chopping	Not required	Saves chopping time and labour

Study of Chemical nature of traditional fodder and hydroponic fodder

Nutrients	Conventional Green Fodder (Maize)	Hydroponics Green Fodder (Maize)
Protein	10.67	13.57
Ether Extract	2.27	3.49
Crude Fiber	25.92	14.07
Nitrogen Free Extract	51.78	66.72
Total Ash	9.36	3.84
Acid Insoluble Ash	1.40	0.33

Summary and Conclusion:

- Successful transfer of Hydroponics technology for green fodder production amongst milk producers.
- Appt. seven kg hydroponics green fodder can replace one kg concentrate feed there by reducing cost of milk production.
- Seven day Hydroponically grown maize fodder has proved to be more nutritious as compared to conventional fodder of 60-80 days.
- Standardization of hydroponics technology in terms of seed usage, green house maintenance cost, production cost of fodder in Goan condition.
- Successful usage of nutritional benefits of hydroponics green fodder for enhancement of productivity, reproductive efficiency and health in milch animals
- As an income generating source to the hydroponics fodder growers.

- Hydroponics Technology a handy tool to unemployed youths who are unwilling to take up agriculture in fields.
- Hydroponics technology could work as beneficial tool to have paddy sapling nursery, flowers and other vital plant propagations beside fodder production for animals.
- Conservation of environment and land saving.

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