

## Importance of Hydroponic Fodder Feeding in Dairy Cattle

Shamim Ali

Assistant Professor, KCVAS-Guru Angad Dev Veterinary & Animal Science University, Punjab

### SUMMARY

The hydroponic fodder is an effective solution for fodder scarcity and promising for sustainable livestock production. The hydroponic fodder production involves growing of plants without soil for a short period of (5-10 day). It can be possible to grow 510 kg of green fodder from 1kg seeds in hydroponic fodder production. It was observed that there is an increase in the nutritional values of crude protein, fibre, ether extract, vitamins and minerals constantly in hydroponic fodders. Hence hydroponics fodder feeding may also improves the milk yield and composition of a dairy cow through increased intake and digestibility of nutrients.

### INTRODUCTION

The word hydroponics has been derived from two Greek words hydro means 'water' and ponics means 'working'. Thus, fodder produced by growing plants in water or nutrient rich solution but without using any soil is known as hydroponics fodder or sprouted grains or sprouted fodder (Dung et al., 2010a). Hydroponics is the technology that has revolutionized the green fodder production in the 21st century. Hydroponics is a method of growing green fodder without soil in environmentally controlled houses or machines. The green fodder is the natural diet for livestock so for a sustainable dairy farming a good quality green fodder should be fed regularly to the dairy animals (Naik *et al.* 2012b). It has been observing that due to many reasons green fodder production has been facing a serious crisis and so the dairy cow productivity Jemimahe *et al.*, 2018.

The major constraints in production of green fodder by dairy farmers are the unavailability of land for fodder cultivation due to small land holding size, more growth time and natural calamities. Further, the non-availability of quality fodders round the year aggravates the constraints of the sustainable dairy farming. Because of the following above constraints now hydroponics technology becomes as an alternative way for growing fodder for farm animals according to Sneath and McIntosh, 2003, Naik et al, 2011, Naik *et al* and Naik, 2014). The technology of green fodder production is especially important in the regions where forage production is limited due to natural calamities. The green fodder is produced from grains, having a high germination rate and grown for a short period of time in a special chamber that provides the appropriate growing conditions. Hence the adoption of this technique has enabled the production of fresh forage from oats, barley, wheat and other grains as per (Rodriguez-Muela et al., 2004). Over recent years, severe shortages in feed supplies for livestock have been experienced in many countries due to repeated droughts as well as shortages of water for irrigation. The nutritional value of sprouted grain improves due to the conversion of complex compounds into simpler and essential form and by minimizing the effect of anti-nutritional factors during germination. Sprouting of grains has resulted in not only increased protein quantity but also quality. This is further complemented by increased sugars, certain minerals and vitamin contents. It has also increased the plant enzyme contents.

These enzymes convert the complex compounds of protein into albumin and globulin thus, improves the protein quality (Shewry et al., 1995). Activation of amylase and lipase during germination also increases the sugar and essential fatty acid content of grains. It has using sprouted barley and maize in growing goat revealed improvement in digestibility of nutrients, body weight gain and feed conversion efficiency. Hence hydroponic fodder is an effective solution for fodder scarcity and is very promising for sustainable livestock production in different regions. It is essentially the germination of a seed and sprouted into a high quality, highly nutritious, disease-free animal food in a hygienic environment free of chemicals like insecticides, herbicides, fungicides and artificial growth promoters (Jensen and Malter, 1995; Al-Hashmi, 2008). This process takes place in a very versatile and intensive hydroponic growing unit where only supplying cereal grain with necessary water, nutrients and sunlight to produce a grass and root combination that is very lush and high in nutrients. This green fodder is extremely high in protein and metabolizable energy, which is highly digestible by most animals according to El-Morsy et al., 2013. Hydroponics is a year-round growing system that produces a consistent quantity and quality of plant material or fodder, regardless of outside weather.

**CONCLUSION**

It is concluded that hydroponic fodder production is an alternative way to fulfill the green fodder requirement of the dairy farm. Hence the adoption of hydroponic technique enabled the production of fresh forage from grains without soil. Such fodder contain high nutritive value due to the conversion of complex compounds into simpler and essential form and due to activation of enzymes during germination. Hydroponic fodders are also found to be high in protein, vitamins and minerals which are essential for dairy Cattles which may result in improving the digestibility and intake of nutrients that may results in improving the milk production and milk quality.

**REFRANCES**

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