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Editorial

Hydroponic Green Fodder - Nutritional Potential Found in Bulgaria

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Feeds have been proposed as a main factor for modern animal production and final outcome from animal husbandry. Importance of the optimal nutritional conditions coupled with reduced production costs and low risk for animal health have led many to predict that all feeds produced must be safe and its chemical characterization and feeding value should not mislead the user. However, for this to become a reality, the nutritional potential of feeds at a relevant scale must be evaluate regularly.

Over recent years, one new, innovative and revolutionary fodder is looking for a place in animal husbandry in Bulgaria, due to the new conditions for development of animal husbandry – animals without land and bad quality of the pasture.

What is hydroponic feed system? It is a system that itself generates a specific atmosphere of humidity and temperature. The system parameters can be programmed. The service involves charging trays with grain, approximately 1 - 1.5 kg, and evenly spread in thickness. From this quantity of grain after 7 days of system startup, 7 - 12 kg of green feed is in ready-to-use form for animal nutrition. Daily service of the system takes about 2 hours. No pesticides, antibiotics are used and therefore the system is an environmentally sustainable. The green fodder produced provides all the three ingredients of the plant: root system, grain and leaves. For comparison, only leaves are used in grazing. The uniqueness of this system is that it is the only one that provides the animals with root crop consumption. It is a key element because of its mineral composition and the rich content of enzymes. Processes in the system are fully automated. Power and water are needed for working regime.

Main grain seed, used in the system, is barley. It has some advantages over the other cereal seeds, mainly high germination rate, higher fiber content (compared to corn for example). Besides the mono-component composition of the raw material in the system (barley [1], maize [2], sunflower, lupine, triticale, etc.), mixtures of two or more seed species may be used depending on the preferences (oat and wheat [3], sorghum, alfalfa and cowpea [4], etc.).

Chemical composition and nutritional potential: According to the results from analyses of green fodder samples from barley (our own results), the average composition and nutritional value (in dry matter basis, DM) is:
Protein: 12.39% crude protein
Fat: 2.96% ether extract
Fiber: 11.59% crude fiber
Ash: 2.92% crude ash
Minerals: 0.075% Ca, 0.358% P
Metabolisable Energy [5]: 11.69 MJ/kg DM (for ruminants)

However, the data on nutritional potential is just to focus on the quality of the feed, in general. Whether the nutrients are being utilized and what is the productive effect of this feed, only the experiments with animals will show. It is important to note that this unique feed is mainly used as an alternative a grain feeds in the diet. Hydroponic green fodder applications in practice of nutrition at lactating cows [6,7], cattle [8], ewes [9], fish [3], poultry and pigs [10], goats [11] showed the following several main impacts:

- Sustainable and balanced energy nutrition
- Reducing the number of milk somatic cells count
- Reduction occurrences of acidosis and mastitis;
- Lower rumen pH;
- Increased digestibility of the ration;
- Early sexual maturity and higher conception rate;
- Faster weight gain and easier weaning in young animals;
- Increased productive longevity in lactating cows and regular hunting cycles;
- Higher milk production and better milk composition;
- Higher quality and improved taste of products of animal origin - milk, meat, eggs, wool, etc.;
- Healthy effect on the animal as a whole;
- Healthy effect on hooves.

Conclusion

Hydroponic green fodder is a rational solution for the year-round production of feed in case of animals without land and pastures shortages in all regions and climatic zones. Green fodder is a result of hydroponic cultivation of sprouted cereals, technical, oil and legume seeds. The hydroponic green fodder produced from this innovative system has a high nutritional potential and value. These feeds are suitable for use at all types and categories of animals - cows, sheep, goats, pigs, horses, rabbits, fish - and birds.

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