

# Zaliųjų pašarų gamyba naudojant vertikalią žemdirbystės hidroponinę technologiją, racionų sudarymas ir gyvulių šėrimas pieno ir mėsos galvijų ūkiuose.

- 1. Keywords:** Green feed, Hydroponic technology, Animal feeding, Greens for feed, Sprouts
- 2. Area:** Livestock farming
- 3. Subarea:** Growing sprouts for fodder, Animal feeding
- 4. Theme:** Production of green feed using hydroponic technology of vertical agriculture, ration formulation and cattle feeding on dairy and beef farms.
- 5. Year:** 2019
- 6. Summary:** Grain germination using hydroponics that was applied in the EIP project is a widely used method of soil-free cultivation in greenhouses with dosing either water or water with nutrient solutions as appropriate. The hydroponic system is installed in a room with controlled air temperature, humidity, and lighting with seed preparation equipment and five- to six-story shelving units arranged vertically for germination with an automated system for irrigation, dosing, and water collection. Sprouted grains, evenly distributed on the shelves, produce shoots within 7 days, which are then used to feed animals by mixing them with the conventional feed. The main advantages of this feed production method are that no soil is needed, and little water is required to grow the feed. The short feed production cycle allows for quick and flexible adaptation of feed production to changing needs. Successful feed production depends on the quality of germinated seeds, hygiene, and conditions during the production.
- 7. More detailed version of the summary:** During the experiments, the addition of germinated grains to rations increased the total cost of production due to the need to produce an additional feed supplement but increased productivity and revenue. In this case, supplementing the rations for the experimental cattle groups with 2 kg of germinated grains, the cost of 1 kg of weight gain increased from 1.4–1.7% (when germinating peas, wheat, and barley) to 7.8% (when germinating alfalfa) compared to that of the control group. Similarly, the cost of 1 kg of milk from the experimental cow groups was 2–6% higher than that from the control group of cows. In both cases, however, the economic effect was due to an increase in weight gain or milk productivity. Having compared the average weight gains of the fattening cattle from the experimental and control groups, it occurred that the average daily weight gain of the experimental group, the ration of which was supplemented with sprouts, was higher; however, it differed significantly from farm to farm and from test to test as well as when applying various grain seeds. The addition of sprouted grains to the ration of fattening bulls caused a faster weight gain of 9.4–19.3%, resulting in the economic effect of about 8–14%. Besides the direct economic effect, the addition of sprouts to the feed ration has a positive impact on other important indicators that affect the value of the cattle or meat. During the experiments, having compared the increase in milk yield from the experimental and control groups of dairy cows, the average milk yield of the cows, the ration of which was supplemented with 2 kg of sprouts, was 4 to 33% higher. The estimated economic effect considering the increase in sales revenue and the production cost of the additional feed is 6–15%. In order to reduce the cost, a part of the concentrated feed can be replaced with sprouts. Replacing 2 kg of the concentrated feed with 4 kg of barley and wheat sprouts, the cost of which is at least twice as low, can lead to an additional milk yield of 8%. Using this ratio of feed adjustment will not change feed cost, and the
- 8. Effect:** Economical
- 9. Argumentation:** Adding 2 kg of germinated grains to the ration of dairy cows, increases the milk yield by 8–17% on average. The estimated economic effect considering the increase in sales revenue and the production cost of the additional feed is 6–15%. The addition of sprouted grains to the ration of fattening bulls caused a faster weight gain of 9.4–19.3%, resulting in the economic effect of about 8–14%.
- 10. Project description:** -
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- 12. URL:** -
- 13. Images:**  
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**14. YouTube:** <https://youtu.be/w2b1B2hqC7c>

**15. Documents:** [Production of green feed using hydroponic technology of vertical agriculture 06-19.pdf](#)