

Self-sufficiency with vitamins and minerals on organic dairy farms

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Self-sufficiency of nutrients is a central element in the organic farming principles. In a project involving five private organic dairy farms, we aimed to achieve self-sufficiency in vitamins and minerals at farm level. All the herds are fed 100% organically grown feed, but so far supplements of minerals and vitamins based on inorganic and synthetic products are imported to all farms. The same level and type of supplement was used for the cows all year round, even though all cows were on grass for at least 150 days during the summer period. The average daily intake from the supplement for a lactating cow was 751 mg E vitamin, 111 mg Cu, and 558 mg Zn.

The content of vitamin and minerals in the home-grown feeds was modelled taking into account the effect of choice of crops; conservation method; season, plant development and climate conditions at harvest; quality of the silage production, and duration of storage. The modelled contents of vitamins in the main ingredients in the feed ration were verified by measuring the actual vitamin content in the silage at harvest as well as losses during storage.

As an example, at one of the farms, where the feed intake was based on 85% grass clover crops during the summer but only 68% during the winter, the home-grown feed could supply the cows with enough vitamin E according to the requirement (800 mg/day) during the summer feeding but not during the winter period. The Cu requirement (10 mg/kg DM) could not be met from home-grown feed during any season. However, supplements of vitamins and minerals secure that requirement was met.

The final outcome of the project will result in strategies for achieving self-sufficiency in vitamins and minerals at individual farms through optimization of the choice of forage crops and management of feed production.