With support from

Federal Ministry of Food and Agriculture

Federal Office for Agriculture and Food

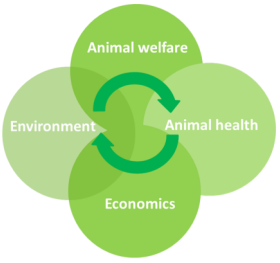
by decision of the German Bundestag

Improvement in dairy farming through breeding strategies for feed intake and metabolic stability under conditions of optimized feeding intensity and environmental sustainability

Breeding, farming, nutrition, care – everything optimum for the dairy cow

Background and aims of ptiKuh

The energy deficiency at the beginning of the lactation due to increased milk yield and the associated risk of diseases, is a big problem in dairy farming. Additionally the public discussion has focused on animal welfare, acceptance of livestock management, environmental impact and cost pressure in milk production, both animals and livestock owners are faced with increased challenges.



For these reasons **15 partners** of science and industry came together to create a national consortium. The aim is to figure out how to improve animal health, welfare in milk production, to protect the environment while also increasing the efficiency. The target of this study is to create the basis for optimized livestock conditions using innovative measurements. This can be an important contribution to meet the requirements of the dairy herd owners, the society and animals. A transfer of the test results through suitable innovations into practice, counseling and experimentation is planned in the agricultural as well as in the veterinary sector.

The following points are in the focus of the experiment:

⇒ Genome based selection for a high feed intake and metabolic stability as well as a reduction of methane emissions

⇒ Testing of practicability of sensors in herd management to the improvement of the animal welfare

⇒ Optimized feeding plan for different feeding intensities

Trial sites of ptiKuh

- **Futterkamp** — Chamber of Agriculture Schleswig-Holstein (LWK SH)
- **Dummerstorf** — Leibnitz-Institut for Farm Animal Biology (FBN), Nutritional Physiology
- **Karkendamm** — Christian-Albrechts-University (CAU), Animal Breeding and Husbandry, Kiel
- **Iden** — Research Centre for Agriculture and Horticulture, Animal Husbandry and Technics
- **Braunschweig** — Friedrich-Loeffler-Institut (FLI), Animal Nutrition
- **Kleve** — „Haus Riswick", Agricultural chamber of North-Rhine Westphalia (LWK NRW)
- **Münchweiler** — Training and Test Institute for livestock management, „Hofgut Neumühle"
- **Triesdorf** — University of Applied Sciences Weihenstephan-Triesdorf (HSWT), Centre for Agricultural Learning
- **Hohenheim** — University of Hohenheim, Animal Nutrition
- **Grub** — Bavarian State Research Centre for Agriculture (LfL), Animal Nutrition
- **Aulendorf** — Agricultural Centre for cattle farming, grassland farming, dairy farming, game and fisheries, Baden-Wuerttemberg (LAZBW)
- **Achselschwang** — Bavarian State Research Centre for Agriculture (LfL), Animal Nutrition

LfL Tierernährung

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www.optikuh.de

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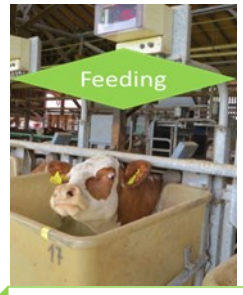
Basic data of ptiKuh

- project duration: 3 years 10/2014 — 03/2018
- trial period: 2 years 12/2014 — 02/2017
- project management: Bavarian State Research Centre for Agriculture (LfL), Prof. Dr. H. Spiekers
- data collection: dry period and lactation period
- source of data: > 1500 dairy cows (Holstein-Friesian (DH), Fleckvieh (FV), Brown Swiss)



- feeding plan
- feed constituents
- feed intake with feeding troughs
- energy balance

- genotype
- liveweight
- body condition
- metabolic parameters blood/urine
- data of sensors in herd management: ruminating activity, rumen pH-value, methane emission
- data of animal health, herd management (Transition Cow Index, TKI)

- milk yield
- milk constituents
- spectral data (OPTIMIR)

Central data collection: Tier und Daten GmbH (TiDa GmbH)

Feeding plan of ptiKuh

The feed is the crucial factor for the energy intake of the dairy cow.

Feeding Varieties		Concentrates supplementation (g / kg ECM*)	
		150	250
Roughage (MJ NEL / kg DM)	6,1	6,1 x 150	6,1 x 250
	6,5	6,5 x 150	6,5 x 250

*energy-corrected milk (4% fat)

Management of lactation:
Different feeding intensities through varying levels of energy in roughage and concentrate supply.

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