



## Use of LoRATH and LoRAIN Weather Monitoring in Dairy Farming

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Modern dairy cows are bred and fed for high productivity. As a result of this, the udders are highly productive bioreactor. Along with milk, cow's highly active metabolism produces a lot of heat which must be transferred away from the cow. As a result of the need for higher productivity, the awareness of dairy farmers to heat susceptibility of cows has increased. Optimum temperatures are in the range below 18°C. With temperatures above 24°C, significant reductions in herd productivity can be anticipated.

### USE OF LoRaWAN®

LoRaWAN® low power radio communication allows for the placement of numerous sensors over the environment of the dairy farm and with all data transmitted through one gateway, connected to the farm's internet connection, thus reducing the cellular cost to nothing. This allows to monitor temperature and relative humidity in different areas of the stable. This is quite important in dairies which are growing organically.

Several **LoRATH\*** devices measuring temperature and relative humidity have been placed in a stable. To monitor the moisture, soil and temperature of the food, a **LoRAIN\*\*** system has been placed in the pasture or free-range area of the farm.

Mobile Apps for Android and IOS allow the farmers to access the LoRAWAN® data from wherever they are. Models for the well-being of the animals are calculated on the website. The outputs are available for weather forecast and for measured data.

### WHY TO USE LoRaWAN®?

The use of LoRaWAN® technology allows a very cost effective and almost real-time monitoring of environmental issues on dairy farms. By using the internet, it permits fast warning if a stress problem (heat stress) might occur. The monitoring of outdoor weather with the help of LoRaWAN® technology secures best fodder due to optimum cutting and harvest times.



\***LoRATH** – a new generation of weather stations that operate on LoRaWAN® or NBloT network. It measures air temperature, relative humidity and soil moisture and can be used to better plan the irrigation, prevent animal health problem that occur in houses with nonstandard climatic conditions, to improve plant protection and prevent crop loses and more.

\*\***LoRAIN** – is the most essential sensor set for every field. It is a compact and simple precision farming equipment on a budget. With collected data it offers spray weather, work force planning, models for disease risk and infection dates for many crops, and much more. It is designed to be easily connected to an existing LoRaWAN® network.

