

Topic: Climate change adaptation and mitigation at the farm scale

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The feed story for dairy production systems under climate change.

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Of all ruminant production systems, high-yielding dairy cows have the most stringent criteria on nutrition, with feed intakes up to more than three times that required for maintenance alone. For this reason, dairy production systems provide an interesting case study with which to explore the implications of climate change on feed provision and utilization by the animal. Dairy production systems across Europe vary widely in production intensity and in nutrition strategies applied. Systems range from almost fully grazed to almost fully confined systems, and from low to high production intensities (per cow or per farmed hectare) of: external resource use (e.g. feed purchased), level of farm automation and technology application, and financial investment. Irrespective of this huge variety of dairy farming systems, they have in common that home-grown roughages are an important part of the diet. Climate change will directly impact on roughage production and hence on: the supply and quality of roughages, the nutritional strategies adopted and cow performance. Indirectly, through its impact on home-grown roughages climate change will also impact on the requirements for: home-grown feed crops, purchased feed crops, supplemental by-product feeds (for example, from the food or bio-energy industries) and processed concentrate feeds, depending on whether production targets are to be maintained or not. These potential consequences of climate change have been reviewed. Challenges addressed and presented here will include the need to reduce phosphorus and nitrogen surpluses and/or losses from the system. The implications and limits to various nutritional adaptation strategies, and the alternatives available to farmers and the feed industry, will be discussed in the context of recent scientific insights and against the background of the models and modelling concepts currently in use in practice and in research.