

## Artturi assists Finnish advisers and farmers to succeed in grass-based dairy production

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**Introduction** Artturi is a collective name for a wide range of services. It is a common tool for different bodies who share an interest in strengthening grass-based dairy production in Finland: research, advisory service and industries. The Service is named after A. I. (Artturi Ilmari) Virtanen, the Finnish scientist who was awarded the Nobel prize in 1945, partly based on his work in developing the ensiling process of grass. The Artturi web site is available in Internet at: <http://www.agronet.fi/artturi>. Access to Artturi Services is free and no registration is required. The language used is Finnish. During summer 2003, 15,000 visits were recorded at the web site.

**Description** Artturi Service combines several tools in one concept:

- Grass harvest time assistance (see detailed description below)
- Extensive selection of advisory material on grass production, harvesting and ensiling techniques, interpretation of feed analysis etc.
- Feed analysis provided by laboratories of Valio Ltd. Correct information of the nutritional quality of grass silage is a key factor for its successful utilisation in dairy cow feeding.
- Local farmers' groups focusing on forage production, which are organised by ProAgria.
- Artturi examination, which measures the level of knowledge of advisors. The names of Artturi experts, i.e. persons who have passed the examination, are published on the Artturi web site.

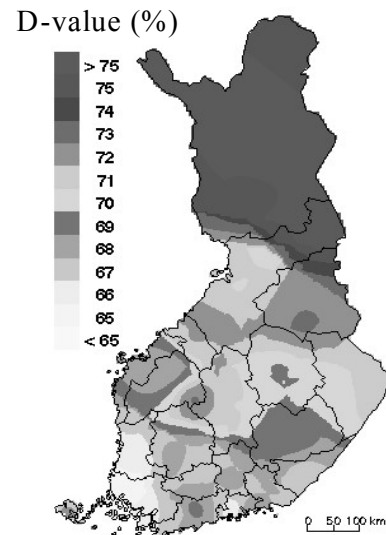
**Grass harvest time assistance** Finnish environmental conditions emphasise correct timing of harvest, because grass development and concomitant decline of its nutritional quality is extremely rapid during primary growth. The quality of grass is expressed as concentration of digestible organic matter in dry matter (D-value, %). The D-value of grass declines on average by 0.5 %-units per day in primary growth. The harvest time assistance consists of the following components:

- D-value estimates are presented separately for grasses and red clover during primary growth, based on growth models. The D-value is calculated from cumulative temperature and geographical location (Rinne *et al.*, 2001). Cumulative temperature for the current day and a 5-day forecast is provided by the Finnish Meteorological Institute. The D-values are presented as maps (Figure 1) and in a numeric form for every municipality in Finland. D-value alerts are also available as SMS text messages into mobile phones.
- Frequent samples from grass are collected from practical dairy farms around Finland, analysed by NIR and results presented on the web site the following day. The samples are used to develop further the grass growth models.
- Verbal description of progress in harvest is reported by advisory personnel from different parts of the country.
- D-values based on growth models can also be obtained subsequently for any date in primary growth and any municipality. These D-values may be used to simulate feed analysis.

**Further development** Artturi provides a wide range of non-commercial information on forage production and utilisation. The flexible structure and present financial support from Finnish Ministry of Agriculture and Forestry facilitate further development of the service to cover feed budgeting, economics and nutrient balances in different forage-based milk production systems. The new components will be based on biologically sound production responses both in plant and milk production derived from research conducted at MTT.

### References

Rinne, M., J. Nousiainen, I. Mattila, H. Nikander & P. Huhtanen (2001). Digestibility estimates based on a grass growth model are distributed via Internet to Finnish farmers. *Proceedings of the Nineteenth International Grassland Congress*, 1072-1073.



**Figure 1** The D-value map of grass based on cumulative temperature on 26 June 2004 shows great geographical variation in Finland