

AgriMontana



NutriScope



ProfiCrops



Profi-Lait



Edition N° 4 / November 2009

Agroscope Research Programmes Newsletter



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Agroscope Reckenholz-Tänikon Research Station ART

Agroscope Research Programmes

Ladies and Gentlemen,
dear members of staff,
dear colleagues

The content and appearance of the current Newsletter have changed slightly: the new content is the section on Profi-Lait, the national platform for communication and co-operation on professional milk production. Many of Agroscope's research groups are linked to the platform. The Newsletter layout has been updated visually as part of our ongoing effort to give all the Agroscope publications a uniform look. This should increase visibility and awareness of Agroscope. The joint Internet presence of the Research Stations at www.agroscope.ch is also a major step in this direction.

Mrs Anna Crole-Rees has recently joined the Research Programme Team. She took up her post as Head of ProfiCrops on 1st September 2009.

Work on the research programmes is progressing to schedule. Examples of important activities currently under way are coordination and interlinkage across individual research projects, events planning, and the maintenance of research programme Internet sites. Looking forward to the second half of the scheduled programme period, the main emphasis during the latter half of 2009 is on planning synthesis capacity and synthesis products. This planning also relates directly to the research institutes' 2012 and 2013 programme of work, introduced as its outline emerges. On the one hand, it would seem best to address open issues in projects with regard to synthesis, or to condense and expand existing core themes. On the other hand, for instance, there is the potential for accompanying stakeholders' concrete implementation projects, thus putting research programme results straight into practice.



Paul Steffen
Director ART

Feedback

Have you any questions, comments or suggestions regarding the Research Programmes? If so, please get in touch with the appropriate Contact Person.

Impressum

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Agriculture's contribution to the sustainable development of mountain areas

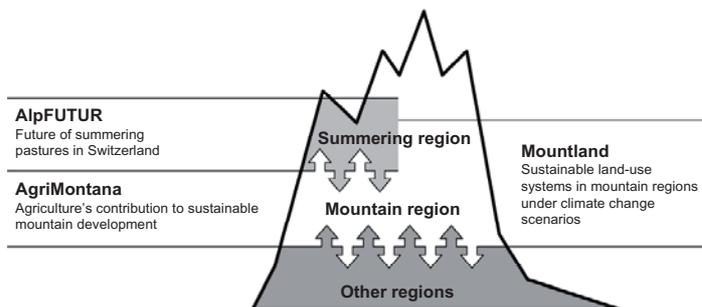


AgriMontana

Expert interviews were held in order to gain an overview of the current problems and future challenges of mountain farming and the mountain regions with a view to giving AgriMontana further concrete form. AgriMontana's contribution to solving current problems will be ascertained on the basis of the survey results and the crystallisation points for synthesis will be defined. Important topics raised by the interviews were site-specific utilisation concepts, possible alternatives to the traditional concept of the family farm, the embedding and dependence of agriculture on regional development, and the preservation and promotion of product-related value added coupled to land management – specifically as a motivation for agricultural activity. An overview of the most important problems and challenges of mountain farming has been compiled on the AgriMontana Internet site.

Currently running alongside the AgriMontana research programme are two other programmes covering mountain agriculture. The combined AlpFUTUR project, initiated jointly by Agroscope Reckenholz-Tänikon ART and the Swiss Federal Research Institute for Forest, Snow and Landscape (WSL), aims to show the prospects for future utilisation of the summering region in Switzerland. The Mountland project of the "Competence Center Environment and Sustainability" (CCES) of the Swiss Institute of Technology (ETH) focuses on an integrative analysis of the ecosystem dynamic in climate change with the impact on socio-economics and land-use policy in mountain regions.

There are various interfaces between AlpFUTUR and AgriMontana, and at certain points their contents also overlap: while AlpFUTUR focuses on the summering region, AgriMontana concentrates on mountain farming as a whole. In developing a strategy for mountain farms and mountain regions, however, AgriMontana also has to bear summering issues in mind. Conversely, "lowland farming" greatly influences summering and is therefore relevant to its development as well.



The aim is to make use of project-overlapping synergies between AlpFUTUR and AgriMontana. There is therefore regular contact and interchange between the two programmes. Collaboration on one or more case study areas is currently under discussion, as is joint identification of the scenarios relating to environmental development and possible pictures of the future required for various research projects. At the level of the projects with which AlpFUTUR and AgriMontana respectively are linked, synergy is used to the extent that different project teams are involved in both programmes.



Healthy, safe, premium quality food of Swiss origin

NutriScope's aim is to improve key factors in food production, thus creating additional value for consumers. This will make Swiss foods more competitive both nationally and internationally, boosting Switzerland as a production location. On the www.nutriscope.ch website connections have already been established with over 150 publications. In the current year, those concerned decided that the research programme would focus mainly on the areas of nutrition, food safety and sensory properties.

Research highlight

The effect of milk and yoghurt on gene expression in human blood cells was investigated in Francina Sagaya's dissertation. The results showed that nutrigenomics is an effective tool in researching the health effects of traditional foods. The dissertation was performed in collaboration with the Swiss Federal Institute of Technology in Zurich and other scientific partners. Agroscope Liebefeld-Posieux ALP Research Station was responsible for project management.

Human study on the effect of milk and yoghurt

The aim of the study was to investigate global gene expression in human blood cells dependent on the one-off food intake of milk and yoghurt by healthy test subjects. The transcriptome resulting from the consumption of the bioactive components of milk and yoghurt was measured by microarray. A randomised human intervention study was carried out. Six healthy male volunteers were fed a controlled diet for three days. This diet was free from dairy products, fermented foods, fresh fruit, fresh vegetables and fruit juices. On the 4th day, each of the subjects was given 540 g milk or yoghurt. Blood samples were taken directly prior to administering the dairy product and then 2, 4, and 6 h after consumption. The total RNA was isolated from the blood and global gene expression analysed on oligonucleotide microarrays.

Human study results

The result for milk was 576 and for yoghurt 626 statistically significant genes which correlated to food intake. During the first six hours after food intake a linear increase or decrease could be observed in most of these genes.

A direct effect of the main constituents of milk and yoghurt was observed, with genes responsible for protein synthesis being regulated upwards.

The statistically significant genes which point directly to the physiological characteristics of dairy products will very shortly be analysed with regard to their biological function. The identification of such molecular biomarkers will, in the future, influence the selection of bacterial strains. It will then be possible to produce milk products with specific nutritional characteristics.

Great interest from industry

These positive results from the human study have excited interest in the milk processing industry. A few projects are already in preparation in collaboration with ALP.



New methods of sustainable crop cultivation in Switzerland under deregulated market conditions

In 2008 ProfiCrops gave priority to continuing development of the programme structure, work on the first integrated projects, and communication. Existing activities were supplemented by main subject areas. As part of the preparatory work for the 2009–2011 programme of work, project managers of the three Agroscope research stations have expressed a wish to participate in one or more Agroscope research programmes with their projects. The project portfolio of the four main ProfiCrops subject areas is currently being analysed with the aid of representatives from ACW and ART. The aim is to define measures necessary for the maintenance of competitive crop production. Someone is in charge of each main area to back up ProfiCrops project management.

Meeting the concerns of potato producers

A meeting between representatives of swisspatat and ART potato specialists provided an opportunity of addressing the measures needed to gear potato research even more effectively to the fresh challenges of the industry organisation. The industry organisation appeared basically very satisfied with the joint research venture. Production costs are considered to be an intra-industry problem. Communication between research and the industry organisation must be improved, particularly with regards to variety selection. Information relating to the major cultivation risks of new varieties and a suitable cropping system could be helpful.

ProfiCrops – innovative research with broad support in society

The integrated project on fire blight unites the most important Swiss research projects on this subject. Because of the high infestation rate in 2007, the selective and controlled use of streptomycin was permitted last year. For two years researchers have been increasing their efforts to find efficient and sustainable alternatives to this controversial antibiotic. Integrating these projects in ProfiCrops makes it possible, among other things, to highlight Swiss endeavours and research strategy and to create synergies. Fifteen research projects on the subject of fire blight are currently running, thirteen of which cover the development of sustainable and competitive solutions (e.g. breeding resistant varieties, biological pathogen control, standard tree production, etc). Nine of these projects deliver results exclusively for organic production. Roughly half the results from four other projects can be used in organic farming. Thirteen projects were implemented with the aid of third party funding (Europe, USA, private sources, Federal Government).

Peer Review at ACW

From 4–8 May 2009 the research activities of ACW were subjected to a peer review (evaluation by experts). On the occasion of a meeting between representatives of the major players in Swiss crop farming, members of the ProfiCrop Forum had the opportunity of an exchange with international experts. The meeting was highly valued by both parties. Among other things the peers evaluated the projects in which ProfiCrops is involved. This allows project managers to achieve project goals more easily (ProfiCrops synergy effect).



This is the first time Profi-Lait has featured in the Agroscope Research Programme Newsletter. For 8 years now, Profi-Lait has been the national platform for communication and collaboration in promoting professional milk production among partners from research, advisory services and practice.

With its many research projects along the milk production chain Agroscope naturally makes a substantial contribution to the Profi-Lait network. Conversely, by integrating its research projects in Profi-Lait, Agroscope wants to draw attention to the important role milk plays in its research. In the main research area of "Milk Production", therefore, Profi-Lait occupies for Agroscope a position similar to the three Agroscope research programmes (ARPs) with their emphasis on "Mountain Farming", "Food Quality" and "Crop Cultivation". That is why Profi-Lait features in communications on ARPs and why, in the future, there will also be a section on Profi-Lait in reports on the three ARPs.



The focus of Profi-Lait's work is on "knowledge transfer" and "cooperation". Campaign-type cross-disciplinary initiatives by Profi-Lait partners like the "Schweizer Dürrfuttermeisterschaft 2008" ("2008 Swiss Dry Feed Championships") have emerged in recent years as one of Profi-Lait's strengths. Activities like this provide the opportunity, jointly and at different levels, of concentrating our minds on the main points of a topic, bringing together the players in the milk production knowledge system, promoting understanding in research, consultancy and practice, and thus eventually increasing utility to the actual stakeholders, the farmers.

The joint initiative entitled "Values & Image of Grass-based Milk Production" comes to a conclusion this year. The Profi-Lait partners want a series of events to highlight the appreciation and special features of this predominantly Swiss method of producing milk. Three key questions will be covered here:

- 1) What are the special characteristics of grass-based milk?
- 2) What is the influence of pasture-based milk production on non-profit performances such as landscaping, biodiversity, animal welfare and environmental protection?
- 3) How can these special characteristics be rated?

It is intended that the knowledge gained from the events and the arguments derived therefrom will help to safeguard and boost appreciation of the special and unique nature of grass-land based milk production in Switzerland at all stages of the milk value-added chain.