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Federal Department of Economic Affairs,  
Education and Research EAER  
**Agroscope**



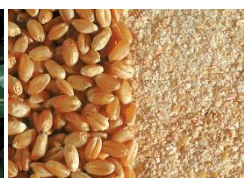
**University of  
Zurich**<sup>UZH</sup>



## User manual

### Swiss Feed Database

Version August 2013



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## 1. System requirements

For best performance, use the latest browser versions of Chrome, Firefox, Internet Explorer or Safari. The web- Browser should support DHTML and JavaScript.

In the case of using Internet Explorer version 8 or older, users are asked to install [Google chrome Frame](#) plug-in. Without this plug-in, many functions do not run properly.

## 2. Milestones and data sources

- |      |  |   |
|------|--|---|
| 2007 | <b>Online database for summary data (in collaboration with the Swiss Institute of Technology Zurich, Prof. H. Hinterberger):</b><br>In 2007, the Swiss online feed database has replaced the print version of the feed recommendations and feed tables for ruminants and pigs. The uploaded summary data represent curated average nutritive values on a dry matter basis which are balanced for data coherence and representativeness. Nutrient and nutritive values of over 600 raw materials and forage for ruminants, pigs, horses and poultry can be retrieved.     | available in German and French          |
| 2013 | <b>Extension of the feed database into a temporal Data Warehouse (in collaboration with the University of Zurich, Database Technology Group, Prof. M. Böhlen):</b><br>The layout of the web interface of the extended version has been completely redesigned. In addition to summary data, also detail data (individual feed samples) become accessible which are geo-referenced and time-referenced when available. Query reports are enriched with visual tools such as charts and maps.<br>Data upload is still ongoing and it will take some time before completion. | available in German, French and English |

Data stem from three sources:

- Research
- Farms, feed industry, surveys
- Publications, feed databases

The merged print version of the feed tables for ruminants and pigs, which summarize the research activities of Swiss research institutions such as Agroscope and universities, constitute the backbone of the feed database. Ongoing research projects including feeding trials and plant breeding trials will continuously provide data.

Through partnerships with AGRIDEA (agricultural extension service), feed laboratories and the feed industry which regularly contribute to the data pool, we were able to extend the data basis. In this context, the yearly hay survey conducted by AGRIDEA is a valuable source for geo-referenced hay data since 2005. This data set reflects the hay quality produced under Swiss farming conditions. The inclusion of silage data is foreseen in the near future.

Digestibility coefficients, for which no Swiss sources exist, are taken from publications and feed tables of foreign institutions such as INRA, DLG, CVB, ARC and NRC.

## 3. Access rights

The access to the database and data use is defined in the [terms of use](#) which are binding to all users. The terms of use are stored under [Disclaimer](#).

The database is subdivided into an open access and password protected, paying section. The corresponding functionalities are summarized in the following table. The purchase of a password for full

access rights costs CHF 150.- per year. Collaborators of Agroscope and the Federal Office for Agriculture, the e-feed group, sponsors and partners are excluded from paying the fee.

Access functions	Open access	Password protected	
		free of charge collaborators of Agroscope, Federal Office for Agriculture, e- feed group, sponsors, partners	paying
Query summary data	√	√	√
e-feed feed catalogue	√	√	√
Help/Glossary	√	√	√
Query hay survey	√	√	√
Query detail data	X	√	√
Downloads, data export (with copyright)			
Summary data	X	√	√
Detail data	X	(√)	(√)
Feeding recommendations	X	√	√
Applications	X	√	√
Create user defined top queries	X	√	√

(√) on request

Open access are all queries relating to summary data of all raw materials and forage including detail data of the hay survey. All supplementary functionalities are password protected to which access is granted on a subscription-based procedure. Subscribers have to login to activate the extended functionalities:

- All queries of detail data
- Data export of summary data as Excel-file. Export of detail data is only available on request.
- Free access to the online version of the feeding recommendations for ruminants and pigs.
- Download of several applications and calculation programs (excel-files).
- Create user defined top queries (query profiles) and save for later use.

## 4. Query concept

Due to the hosting of some parts of the database on two different servers (Agroscope, university of Zurich), it cannot be avoided that the password login has to be repeated more than once.

The database can be accessed by two websites, either over the website of Agroscope <http://www.agroscope.admin.ch/futtermitteldatenbank/index.html>, where the files of the feeding recommendations and applications are stored, or directly over [www.feedbase.ch](http://www.feedbase.ch). The two websites are interlinked.

### 4.1 Home page

The task bar with search options at the top of the home page is organized into a row of buttons each corresponding to a search category. Additional buttons are for option settings (info, login, language). Some buttons are loaded dynamically depending on already chosen options.

In the middle of the home page, a window section is reserved for **Top queries**. A click on these predefined feed and nutrient combinations loads the shortcut for the corresponding query. The available examples showcase the search functionalities of the database.

In the window section **Sponsors**, predefined, product specific top queries are stored that relate to the product range of sponsors.

Institutions that regularly provide data or collaborate in some form figure under the tab **Partners**.

Home page

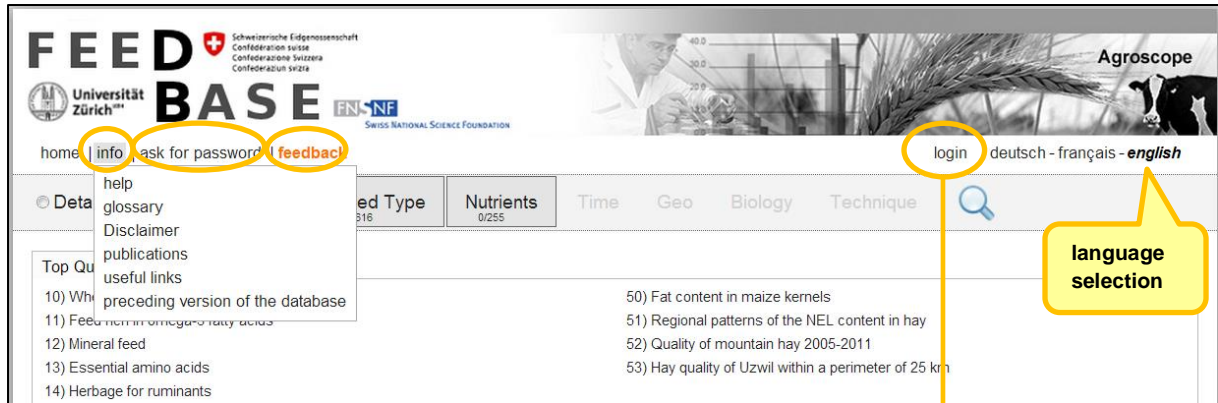
The screenshot shows the home page of the FEED BASE Agroscope database. The header includes the logos of the University of Zurich, FEED BASE, and Agroscope. The navigation bar contains links for 'home', 'info', 'ask for password', and 'feedback'. The main menu has tabs for 'Detail Data', 'Summary Data', 'Feed Type', 'Nutrients', 'Time', 'Geo', 'Biology', and 'Technique'. The 'Top Queries' section lists 17 predefined feed and nutrient combinations, with a yellow callout box pointing to it that says 'Shortcut for predefined feed and nutrient combinations'. Below this is a 'Sponsors' section with one entry. At the bottom is a 'Partners' section with logos for various institutions like agridea, WydenZentrum, UFAG LABORATORIEN, eurofins, UFA, and Berner Fachhochschule. The footer contains copyright information and a disclaimer.

## 4.2 Info, feedback, login, password

The button **info** expands into the following list containing documents or redirecting to other websites: **help** (user manual), **glossary** with the complete feed list and nutrient list in alphabetic order, **Disclaimer** (terms of use), **publications** (redirecting to University of Zurich) and a collection of **useful links**. The link to the preceding version of the database is available only during the transition period. Users can send comments, wishes, suggestions, and questions or notify function disorders using the **feedback form**.

Users must **login** to get access to the password protected section. The password subscription procedure is activated by clicking on the link **ask for password**.

Info, feedback, login, password



Feedback form

Login

#### 4.3 Summary Data (open access)

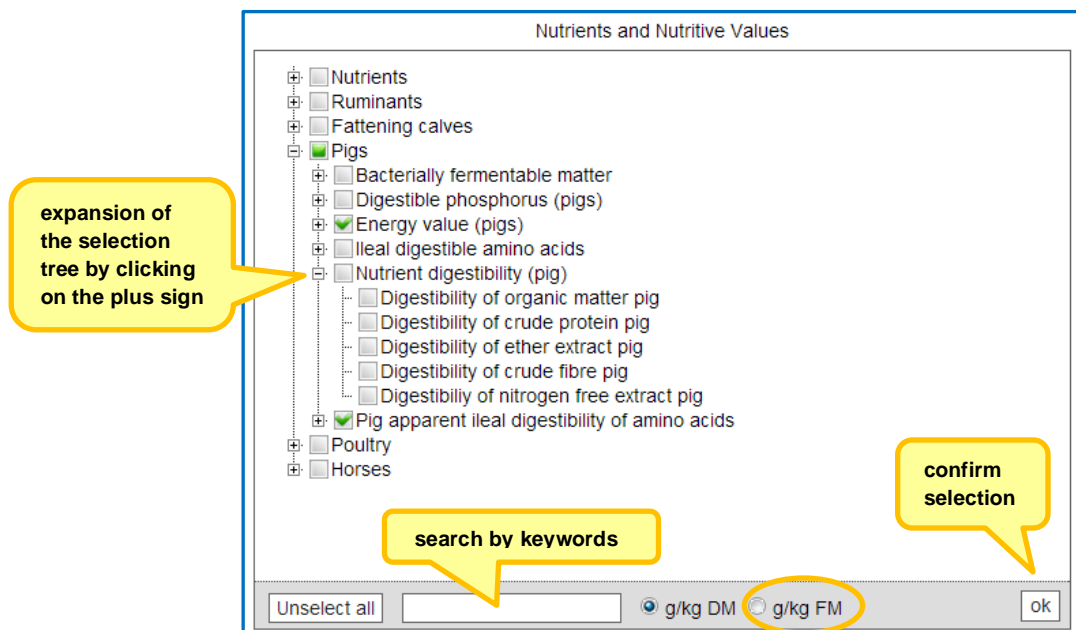
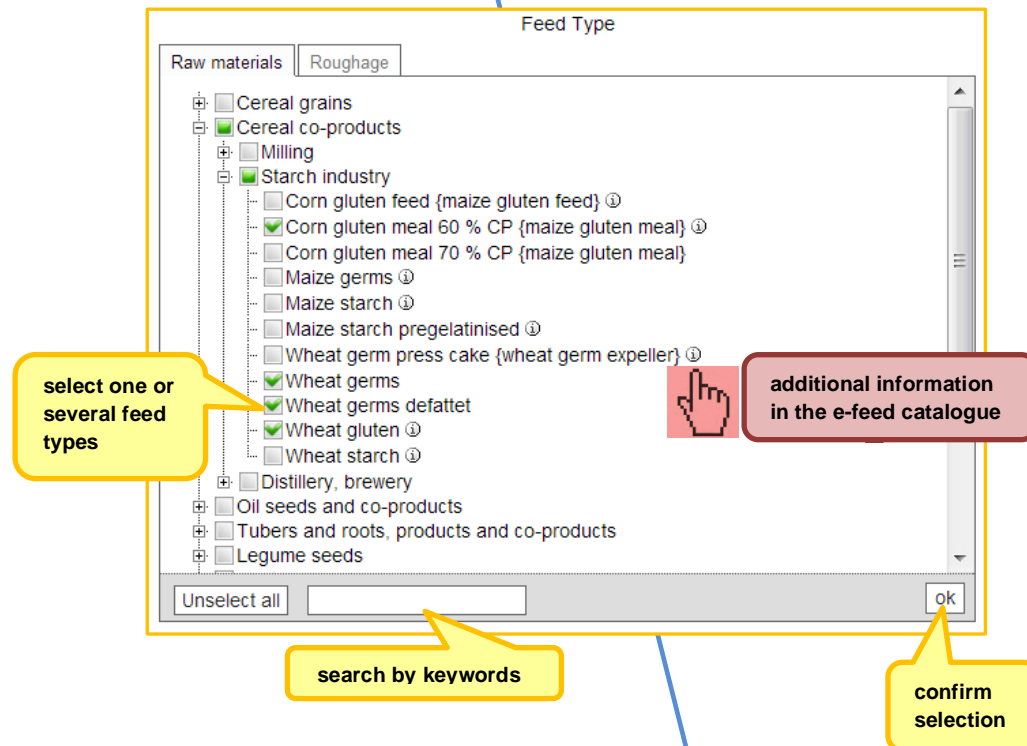
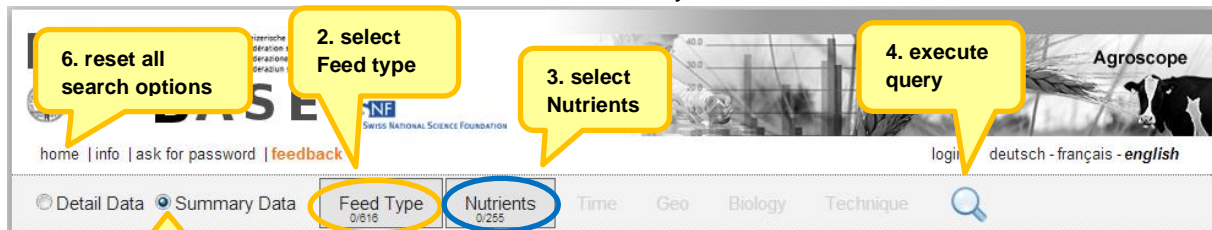
The queries are constructed along the row of buttons of the task bar from left to right. Each button represents a search category starting with **feed type**. A click on a button expands an overlay window where the relevant search options are structured either as tab, list, and tree of check-boxes or map. Some search options are loaded dynamically based on already chosen options.

**Query procedure step by step:**

1. Select Summary Data
2. Select feed type (Raw materials and/or Roughage)
3. Select Nutrients and/or Nutritive values
4. Execute query

5. With password: possibility to save the constructed query as a personalized top query and in addition, access to the export function.
6. Reset all search options

## Summary data





Is a feed type accompanied by the ⓘ sign, then the link redirects to the [e-feed-catalogue](#) (online e-learning tool in feed science) containing a short feed description and indications for feeding restrictions. However, the e-feed-catalogue is not available in English yet.

Selection options must always be confirmed by clicking on the **ok** button.

By default, nutrients are displayed in g, mg or MJ per kg of dry matter (DM). If the as-fed basis is preferred, then the option **g/kg FM** has to be selected.

The query is started with the loupe sign 🔍 By clicking on the [home](#) button, all search options are reset.

#### 4.4 Detail Data – roughage (hay) survey (open access)

The [Roughage survey](#) is conducted yearly by AGRIDEA, the Swiss extension service, in collaboration with several feed-stuff laboratories. Feed samples are taken on farms and thus reflect the roughage quality under farming conditions. In most cases, proximate analysis is based on *Near Infrared Spectroscopy* as routine analysis.

The query schema is identical to Summary Data queries except that additional buttons – [Time](#) and [Geo](#) – are loaded containing tabs for temporal and geographic search options.

Roughage survey

home | info | ask for password | [feedback](#) login deutsch - français - [english](#)

Detail Data Summary Data **Feed Type** 4/4 Nutrients 0/27 Time 0/0 Geo 0/1 Biology Technique 🔍

1. Select Detail Data

2. select Feed Type

Feed Type

☒ Roughage survey ☐ Raw materials ☐ Roughage

- ☒ Hay 1. cut
- ☒ Hay 2. ff cut
- ☒ Hay all cuts
- ☒ Hay not specified

*The roughage survey is conducted yearly by AGRIDEA, the Swiss extension service, in collaboration with feed-stuff laboratories. Feed samples are taken on farms and represent the quality under farming conditions.*

confirm selection

Unselect all ok

**FEED BASE** Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra FN+NF  
SWISS NATIONAL SCIENCE FOUNDATION

home | info | ask for password | [feedback](#) login deutsch - français - english

Detail Data ☒ Summary Data ☐ Feed Type ☐ **Nutrients** ☐ Time ☐ Geo ☐ Biology ☐ Technique

### 3. select Nutrients

Nutrients and Nutritive Values

- ☒ ADF -- Acid detergent fibre
- ☐ ADL -- Acid detergent lignin
- ☐ APIE -- Absorbable protein at intestine from energy
- ☐ APIN -- Absorbable protein at intestine from degradable protein
- ☒ Ca -- Calcium
- ☐ Cu -- Copper
- ☐ Fe -- Iron
- ☐ K -- Potassium
- ☐ Mg -- Magnesium
- ☐ Mn -- Manganese
- ☒ NDF -- Neutral Detergent Fibre
- ☒ NEL -- Net enregy lactation
- ☐ NEG -- Net energy growth
- ☐ NFC -- Non fibre carbohydrate calculated
- ☐ Na -- Sodium
- ☐ OM -- Organic matter
- ☒ P -- Phosphorous
- ☐ MPE -- Microbial protein from fermentable organic matter
- ☐ MPN -- Microbial protein from degradable protein
- ☐ Ash -- Crude ash
- ☒ CF -- Crude fibre

Unselect all ok

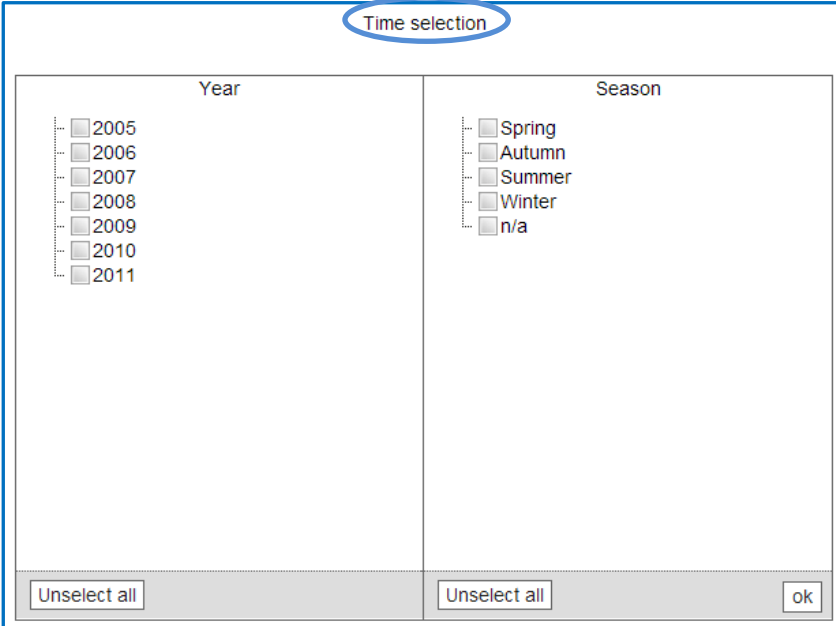
confirm selection

In contrast to Summary Data, in Detail Data mode nutrients are loaded dynamicaly depending on the already selected feed type. The available nutrients are listed in alphabetical order.

**At least one** nutrient must be selected and must be confirmed by **ok**.

**4. select Time:** time periods may be selected but must not. If no selection is done, then no

time restriction applies and all time stamps are considered.



The image shows a 'Time selection' dialog box. It is divided into two columns: 'Year' and 'Season'. The 'Year' column contains a list of years from 2005 to 2011, each with a checkbox. The 'Season' column contains a list of seasons: Spring, Autumn, Summer, Winter, and n/a, each with a checkbox. At the bottom of the dialog, there are two 'Unselect all' buttons and an 'ok' button.

**5. Geographical selection:** *Canton* and *Altitude* may be selected but must not. If no selection is done, then no Geo restriction applies. The tab *Radius* refers to a tool enabling refined geographic search on a user defined, local level. To activate the radius search, a village name or zip code must be inserted in the address field and the size of the radius (5, 10 or 25 km) be selected. By clicking on the *search* button, the perimeter of the local search restriction is drawn on the map. The selection must be confirmed by *ok*.



The image shows the top navigation bar of the FEED BASE Agroscope website. The header includes the FEED BASE logo, the University of Zurich logo, and the Agroscope logo. Below the header, there is a navigation menu with tabs: Detail Data, Summary Data, Feed Type, Nutrients, Time, Geo, Biology, and Technique. The 'Geo' tab is highlighted with a yellow circle. To the right of the 'Geo' tab, there is a search icon and a yellow callout box with the text '6. execute query'. Below the navigation bar, there are three arrows: a yellow arrow pointing left, a red arrow pointing down, and a blue arrow pointing right.

Geographical selection

Canton | Altitude in m | Radius

- ☐ Aargau
- ☐ Appenzell Ausserrhoden
- ☐ Appenzell Innerrhoden
- ☐ Baselland
- ☐ Bern
- ☐ Fribourg
- ☐ Glarus
- ☐ Graubünden
- ☐ Jura
- ☐ Luzern
- ☐ Neuchâtel
- ☐ Nidwalden
- ☐ Obwalden
- ☐ Schaffhausen
- ☐ Schwyz
- ☐ Solothurn
- ☐ St. Gallen
- ☐ Thurgau
- ☐ Ticino
- ☐ Uri

Unselect all ok

Geographical selection

Canton | Altitude in m | Radius

- ☐ 600 - 799
- ☐ 800 - 999
- ☐ < 600
- ☐ > 1000

Geographical selection

Canton | Altitude in m | Radius

Address 1725 Radius 10km search clear

insert village name or zip code

define radius

execute search

confirm selection

ok

The buttons **Biology** and **Technique** will be activated at a later date.

As above, queries are executed with click on Nutrients of the roughage survey are displayed in g per kg of dry matter. By clicking on the **home** button, all search options are reset.

#### 4.5 Detail Data – raw materials (password protected)

Except for the roughage survey, all further Detail Data of raw materials and forage are password protected and are only available on a subscription-based, paying access. Subscribers have to **login** to activate the extended functionalities

Once logged in, additional search menus are loaded:

1. **Feeding recommendations** → redirection to website of Agroscope (see chapter 7, Downloads)

2. **Applications** → redirection to website of Agroscope (see chapter 7, Downloads)
3. Tab **my Queries** (see chapter 6, Create user defined top queries)

The **query schema** is analogous to the roughage survey except for additional functionalities:

1. Login with user name and password
2. Select Detail Data
3. Select Feed Type (Raw materials and/or Roughage)
4. Select Nutrients and/or Nutritive values
5. Select time options
6. Select geographic options
7. Execute query
8. With password: possibility to save the constructed query as a personalized top query (see chapter 6, Create user defined top queries)
9. Reset all search options

### Detail Data query

The screenshot shows the FEED BASE web application. The header includes logos for Universität Zürich, Schweizerische Eidgenossenschaft, and Agroscope. The main navigation bar has links for home, info, feeding recommendations, applications, and feedback. Below this, there are tabs for Detail Data, Summary Data, Feed Type, Nutrients, Time, Geo, Biology, and Technique. The 'Detail Data' tab is selected. A list of queries is displayed, including '10) Wheat and by-products', '11) Variability of protein content in corn gluten meal', and '12) Regional patterns of the NEL content in hay'. A yellow callout box labeled '2. select Detail Data' points to the 'Detail Data' radio button. Another yellow callout box labeled '7. execute query' points to the 'Technique' tab.

The screenshot shows the 'Feed Type' selection dialog. The 'Roughage survey' tab is active. The tree view shows the following structure:

- Cereal grains
  - Barley grains, heavy (70 - 74 kg/hl) (lat. Hordeum vulgare)
  - Barley grains, light (55 - 61 kg/hl) (lat. Hordeum vulgare)
  - Barley grains, medium (62 - 69 kg/hl) (lat. Hordeum vulgare) ⓘ
  - Barley, bulk density unknown (lat. Hordeum vulgare)
  - Maize, grains (Corn) (lat. Zea mays) ⓘ
- Cereal co-products
  - Starch industry
    - Corn gluten meal 60 % CP {maize gluten meal} ⓘ
    - Corn gluten meal 70 % CP {maize gluten meal}
- Tubers and roots, products and co-products
  - Potato protein ⓘ
- Legume seeds
  - Horse bean {field bean, faba bean} (lat. Vicia faba) ⓘ
  - Pea, seeds (lat. Pisum sativum ssp) ⓘ
- Mineral feed

At the bottom, there is an 'Unselect all' button and an 'OK' button. A yellow callout box labeled 'confirm selection' points to the 'OK' button.

### 3. Select Feed Type

On Detail Data mode, only those feed types which have been uploaded are listed in the selection tree. As data curation is a time consuming process, it will take some time until all feed types become available.

**At least one feed type must be selected.**

Nutrients and Nutritive Values

- ☐ NEG -- Net energy growth
- ☐ Na -- Sodium
- ☐ NIE -- Nitrogen free extract
- ☐ OM -- Organic matter
- ☐ P -- Phosphorous
- ☐ PHE -- Phenylalanine
- ☐ PHE\_profile -- Phenylalanine (profile)
- ☐ MPE -- Microbial protein from fermentable organic matter
- ☐ MPN -- Microbial protein from degradable protein
- ☐ PRO -- Proline
- ☐ PRO\_profile -- Proline (profile)
- ☒ Ash -- Crude ash
- ☒ CF -- Crude fibre
- ☒ EE -- Fat
- ☐ RNB ch -- Ruminant protein balance CH
- ☒ CP -- Crude protein
- ☐ S -- Sulphur
- ☐ ABC -- Acid binding capacity
- ☐ SER -- Serine
- ☐ SER\_profile -- Serine (profile)
- ☐ Se -- Selenium
- ☐ THR -- Threonine

Unselect all ok


#### 4. Select Nutrients

Nutrients are loaded dynamically depending on the already selected feed type. The available nutrients are listed in alphabetical order.

**At least one nutrient must be selected.**

confirm  
selection

**Time options** and **geographic options** may be selected but they must not be restricted explicitly. Without marked check-boxes, data is assumed unrestricted and taken completely. The query procedure is the same as described above in chapter 4.4.


As above, queries are executed with click on  Nutrients are displayed in g per kg of dry matter. By clicking on the **home** button, all search options are reset.

## 5. Data views of query reports

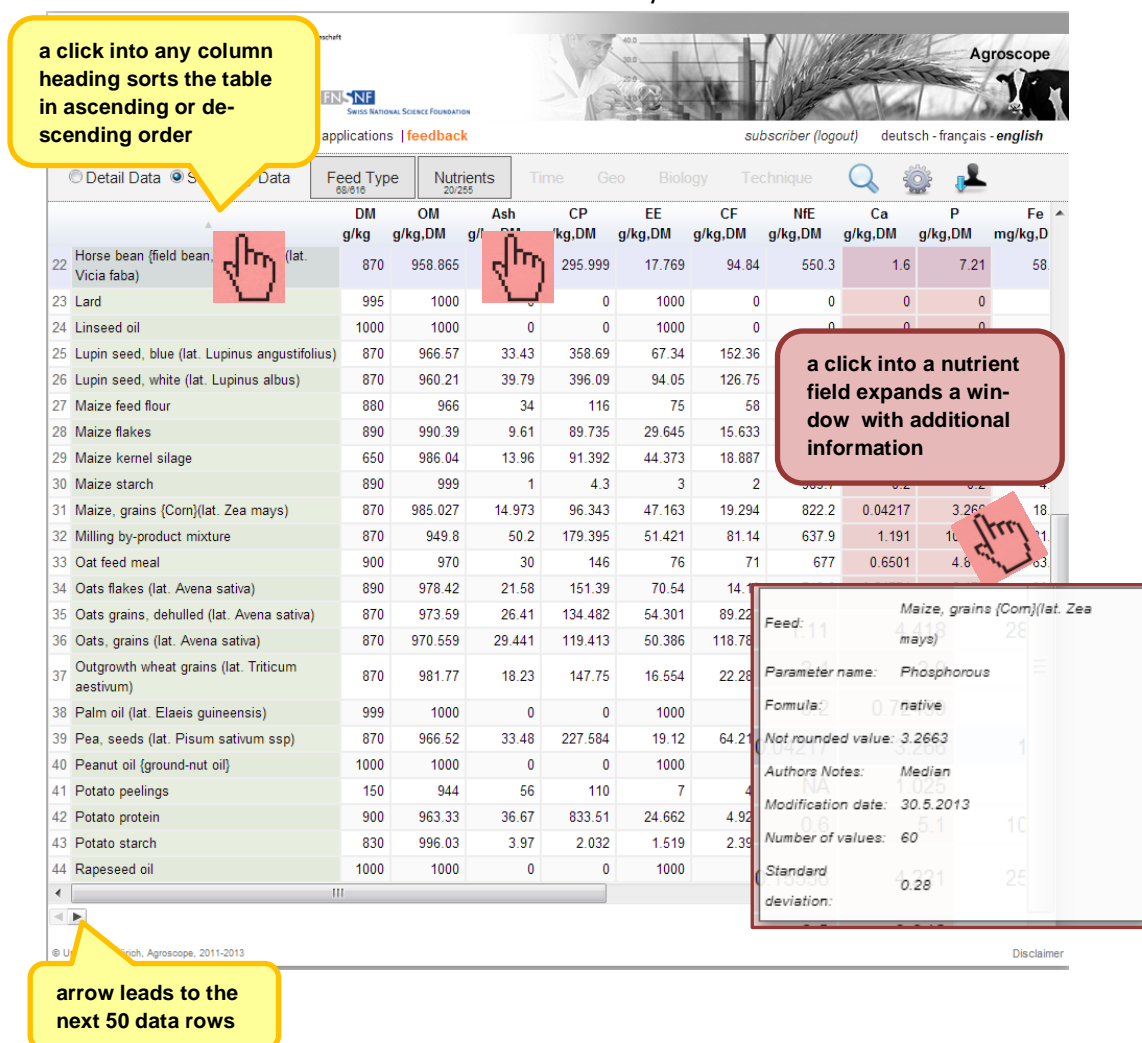
### 5.1 Data view of Summary Data

The results of Summary Data queries are displayed as **sortable table**, one nutrient per column and one feed type per row. By moving the horizontal and vertical scroll bars, the complete report can be investigated. Row number (data records) is limited to 50 at the most. To display the next 50 rows, the arrow at the lower left corner has to be activated.

A click into any column heading sorts the table in ascending or descending order. A click into a nutrient field expands an overlay window with **additional information** such as sample count, formula used for computation of derived nutrients, date of last update. This information display also serves as orientation help in very large tables since feed name and nutrient definition is always given.

Feed type and/or nutrient selections can be modified (add, delete) at any time. To activate the change, the query must be run again with click on the loupe 

Data view of Summary Data



**a click into any column heading sorts the table in ascending or descending order**

**a click into a nutrient field expands a window with additional information**

**arrow leads to the next 50 data rows**

	DM	OM	Ash	CP	EE	CF	NfE	Ca	P	Fe
	g/kg	g/kg,DM	g/kg	g/kg,DM	g/kg,DM	g/kg,DM	g/kg,DM	g/kg,DM	g/kg,DM	mg/kg,D
22 Horse bean (field bean, Vicia faba) (lat. ...)	870	958.865		295.999	17.769	94.84	550.3	1.6	7.21	58
23 Lard	995	1000		0	1000	0	0	0	0	
24 Linseed oil	1000	1000	0	0	1000	0	0	0	0	
25 Lupin seed, blue (lat. Lupinus angustifolius)	870	966.57	33.43	358.69	67.34	152.36				
26 Lupin seed, white (lat. Lupinus albus)	870	960.21	39.79	396.09	94.05	126.75				
27 Maize feed flour	880	966	34	116	75	58				
28 Maize flakes	890	990.39	9.61	89.735	29.645	15.633				
29 Maize kernel silage	650	986.04	13.96	91.392	44.373	18.887				
30 Maize starch	890	999	1	4.3	3	2				
31 Maize, grains (Corn)(lat. Zea mays)	870	985.027	14.973	96.343	47.163	19.294	822.2	0.04217	3.266	18
32 Milling by-product mixture	870	949.8	50.2	179.395	51.421	81.14	637.9	1.191	10	11
33 Oat feed meal	900	970	30	146	76	71	677	0.6501	4.6	63
34 Oats flakes (lat. Avena sativa)	890	978.42	21.58	151.39	70.54	14				
35 Oats grains, dehulled (lat. Avena sativa)	870	973.59	26.41	134.482	54.301	89.22				
36 Oats, grains (lat. Avena sativa)	870	970.559	29.441	119.413	50.386	118.78				
37 Outgrowth wheat grains (lat. Triticum aestivum)	870	981.77	18.23	147.75	16.554	22.28				
38 Palm oil (lat. Elaeis guineensis)	999	1000	0	0	1000					
39 Pea, seeds (lat. Pisum sativum ssp)	870	966.52	33.48	227.584	19.12	64.21				
40 Peanut oil (ground-nut oil)	1000	1000	0	0	1000					
41 Potato peelings	150	944	56	110	7	4				
42 Potato protein	900	963.33	36.67	833.51	24.662	4.92				
43 Potato starch	830	996.03	3.97	2.032	1.519	2.38				
44 Rapeseed oil	1000	1000	0	0	1000					

Feed: 11 Maize, grains (Corn)(lat. Zea mays)

Parameter name: Phosphorus

Formula: 0 native

Not rounded value: 3.2663

Authors Notes: Median

Modification date: 30.5.2013

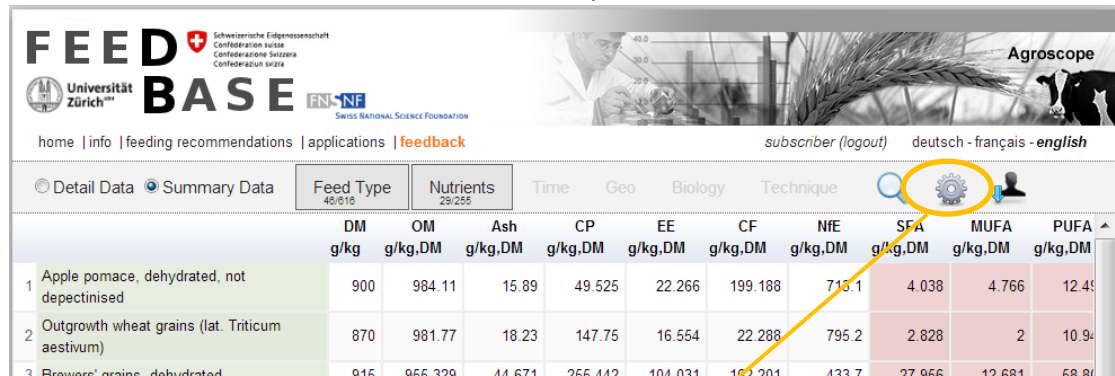
Number of values: 60

Standard deviation: 0.28



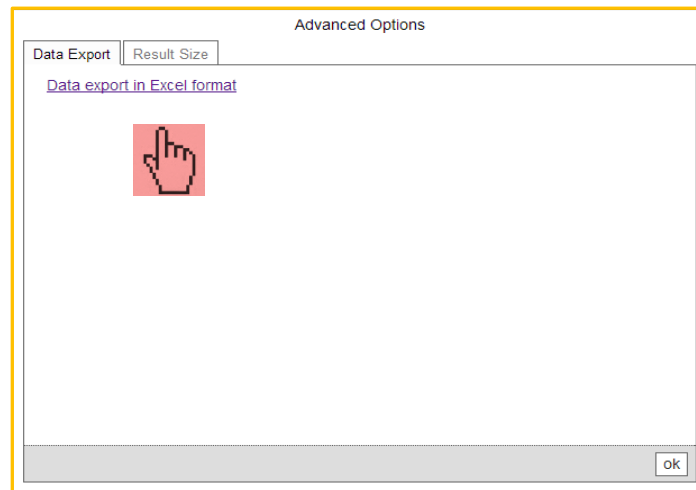
In the password protected mode, the query results can be **exported** as Excel-file for further data use.

### Data export



	DM g/kg	OM g/kg,DM	Ash g/kg,DM	CP g/kg,DM	EE g/kg,DM	CF g/kg,DM	NfE g/kg,DM	SFA g/kg,DM	MUFA g/kg,DM	PUFA g/kg,DM
1 Apple pomace, dehydrated, not depectinised	900	984.11	15.89	49.525	22.266	199.188	715.1	4.038	4.766	12.45
2 Outgrowth wheat grains (lat. Triticum aestivum)	870	981.77	18.23	147.75	16.554	22.288	795.2	2.828	2	10.94
3 Broward's maize, dehydrated	915	955.329	11.671	255.112	10.1031	152.201	133.7	27.956	12.681	58.81

advanced options: data export and adjustment of the result size



Advanced Options

Data Export Result Size

[Data export in Excel format](#)

OK

## 5.2 Data view of Detail Data (open access restricted to hay survey)

### 5.2.1 Interactive layout

The query results of Detail Data are displayed in three interacting windows each providing a specific data view:

- Google Map
- Scatter plot, statistic, region comparison
- Sortable list

The tabulated list of individual feed samples is interlinked with visual tools which interact when clicking on an individual sample on the map, the scatter plot or table row. Only geo-referenced feed samples are displayed on the map by a marker. The visualization options facilitate data interpretation and data analysis.

By default, result display is limited to **150 individual samples** as a large data volume will result in communication delays and may affect the performance. The result size can be modified manually by



adjusting the number of shown results with the help of the button **Advanced Options** (see below).  
 Thereby, all views of a given query result are adjusted to the updated result size.

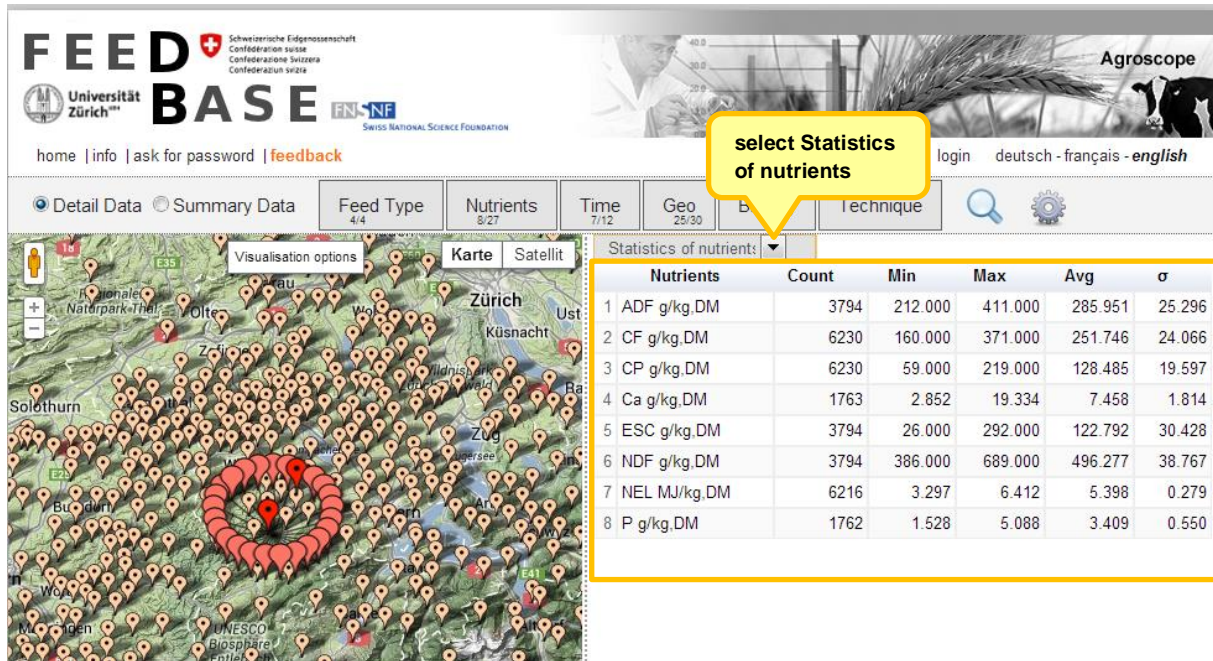
Example of a query result based on the hay survey

LIMS-Nr.	Date	Canton	ZIP	Feed Type	ADF g/kg,DM	CF g/kg,DM	CP g/kg,DM	g/l
1 xxx90	01.02.05	Wallis	1945	Hay all cuts		258.637	109.015	
2 xxx90	01.02.05	Wallis	1945	Hay all cuts		303.429	84.016	
3 xxx90	01.02.05	Wallis	1945	Hay all cuts		266.769	95.797	
4 xxx25	01.02.05	Wallis	1945	Hay all cuts		243.345	115.177	11.519
5 xxx65	01.02.06	Wallis	1945	Hay all cuts		238.719	123.158	
6 xxx67	01.02.06	Wallis	1945	Hay all cuts		231.428	119.96	
7 xxx39	01.02.10	Wallis	1945	Hay not specified	342	291	97	93 506
8 xxx40	01.02.10	Wallis	1945	Hay not specified	287	229	149	66 439
9 xxx41	01.02.10	Wallis	1945	Hay not specified	321	262	103	62 492
10 xxx42	01.02.10	Wallis	1945	Hay not specified	265	210	145	84 424

## 5.2.2 Nutrient statistics and region comparison

**Statistical details** extracted from chosen nutrients can be selected in the drop-down menu placed at the top of the scatter plot window section. Sample count, min, max, average and standard deviation are shown. In the same drop-down-menu, the tool **one-to-many-regions comparison** can be activated (see below).

### Nutrient statistics

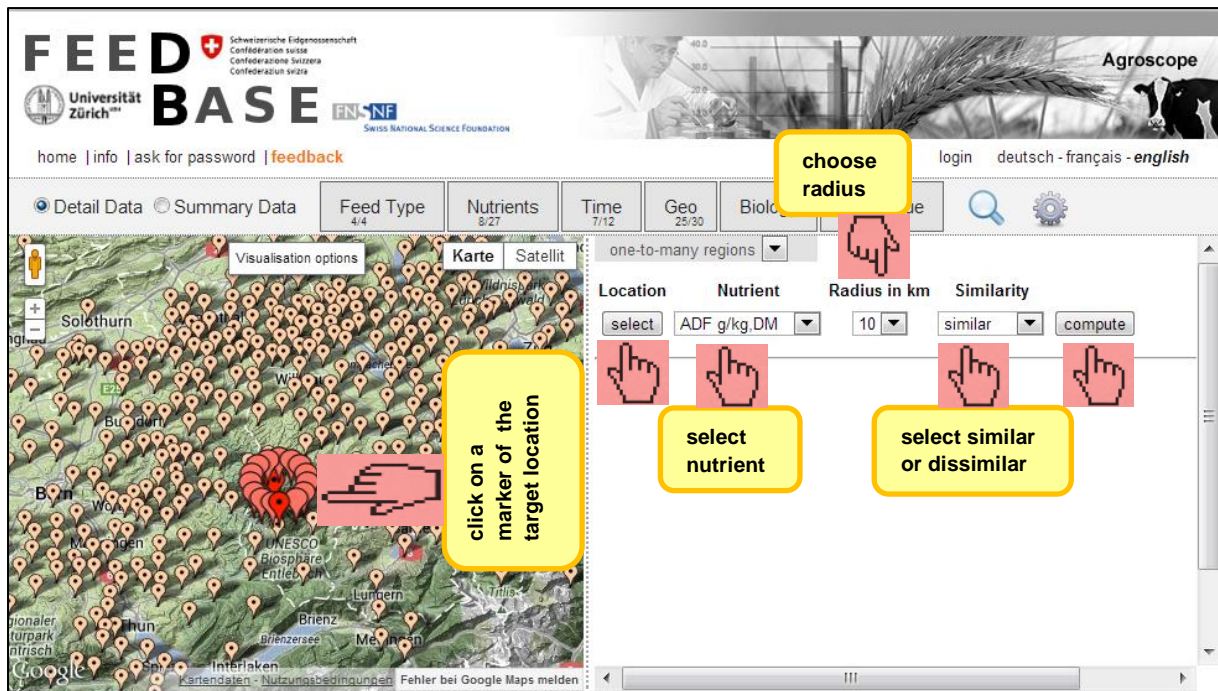


**One-to-many-regions comparison:** this tool computes the top 30 most similar or most dissimilar regions for a selected nutrient and a defined target location based on the probability of similarity. The underlying statistical procedure is a t-test.

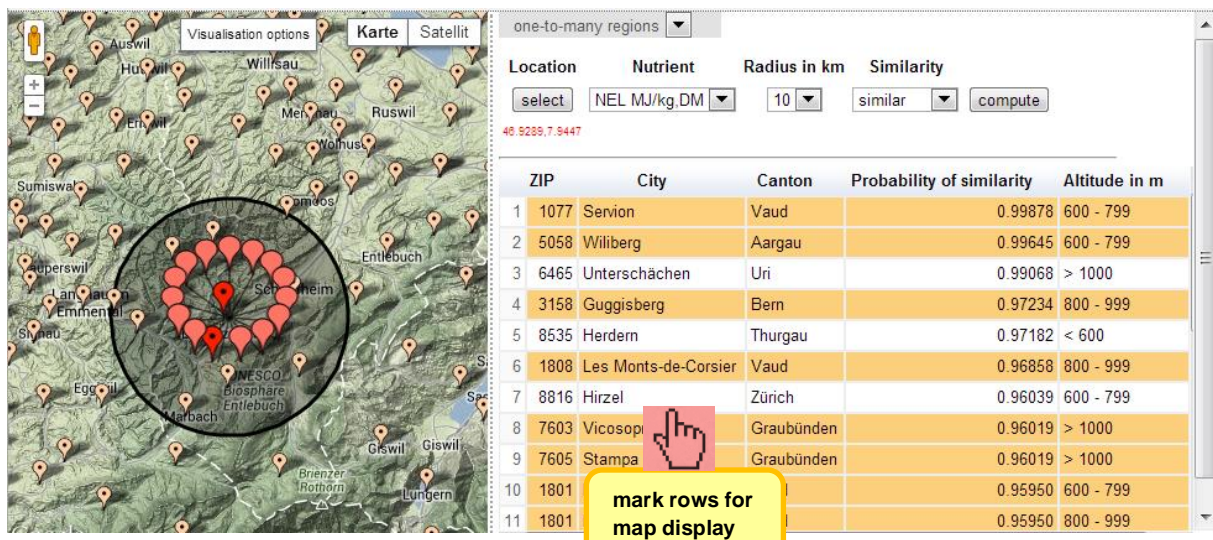
Procedure: select target region by clicking the **select location** button. Move the cursor to a chosen target location and click on an individual marker on the map, select nutrient, choose radius, select similarity mode (similar or dissimilar) and click the button **compute**. The result is displayed as interactive list.

### Procedure for region comparison



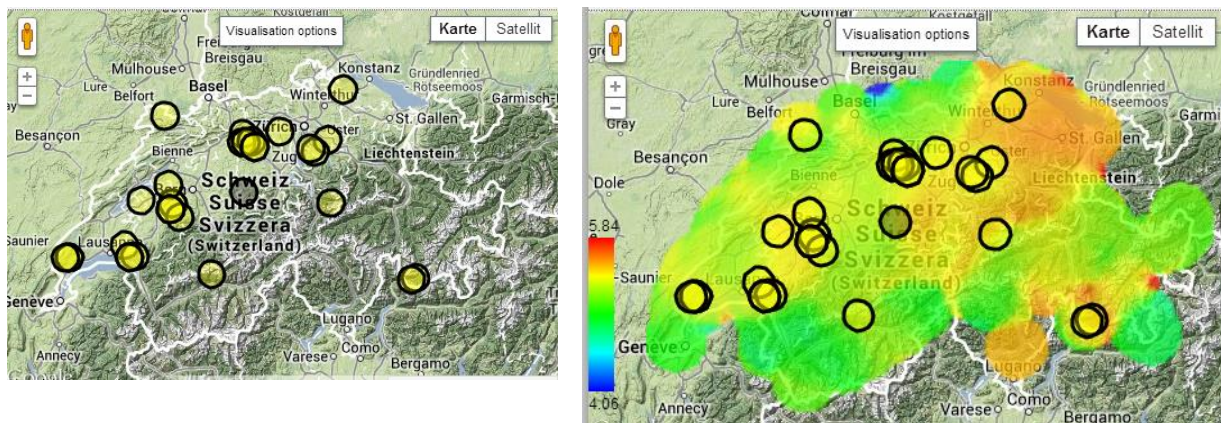


Result display of region comparison: top 30 regions having a similar NEL-content compared to the target location *Escholzmatt*



Top 30 most similar regions

Top 30 .... with nutrient density (NEL) in the background

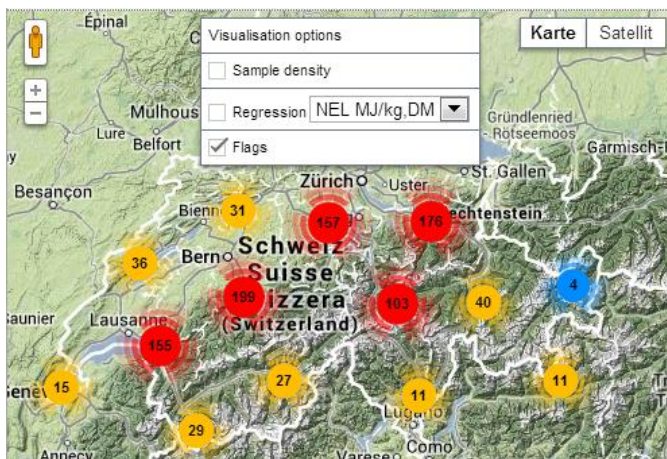


### 5.2.3 Visualization options Google Map

With Google Map, three visualization options are available:

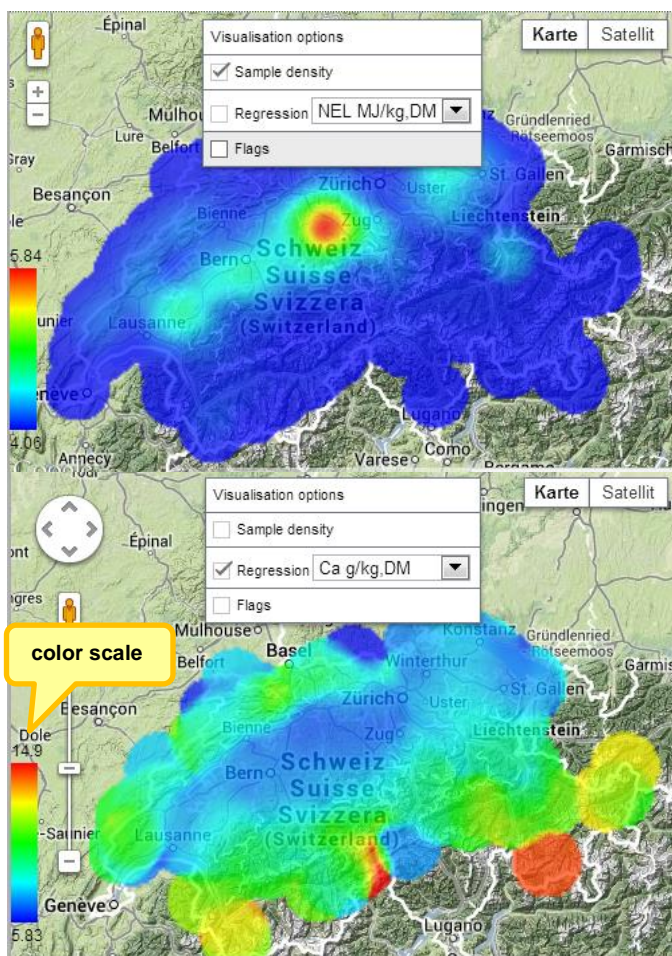
- *Markers* depicting the location of sample origins.
- *Sample density*: colored density distribution of sample origins derived from kernel density function.
- *Nutrient density*: computation of the spatial nutrient concentration based on the bivariate kernel regression technique. Density values are colored according to a dynamic color scale.

Markers can be activated in combination with sample density or nutrient density. For meaningful, country-wide interpretation of color patterns, > 800 locations with samples are required. The geo-referenced dataset of the roughage survey fulfills the required data volume for most nutrients.



The individual **markers** (flags) identifying a sample location become visible only after zooming in. For the given example, 1012 locations with hay samples are available.





The **density pattern** shown on the left clearly identifies a hot spot in sample origin. In the case of hay samples out of the hay survey, most come from central Switzerland. Blue stands for low density, red stands for high density. The color scale is dynamically generated for each query.

The color scale for **nutrient density** is dynamically generated for each query. In the shown example, Ca-content of hay samples range from 5.83 g/kg DM = blue to 14.9 g/kg DM = red.

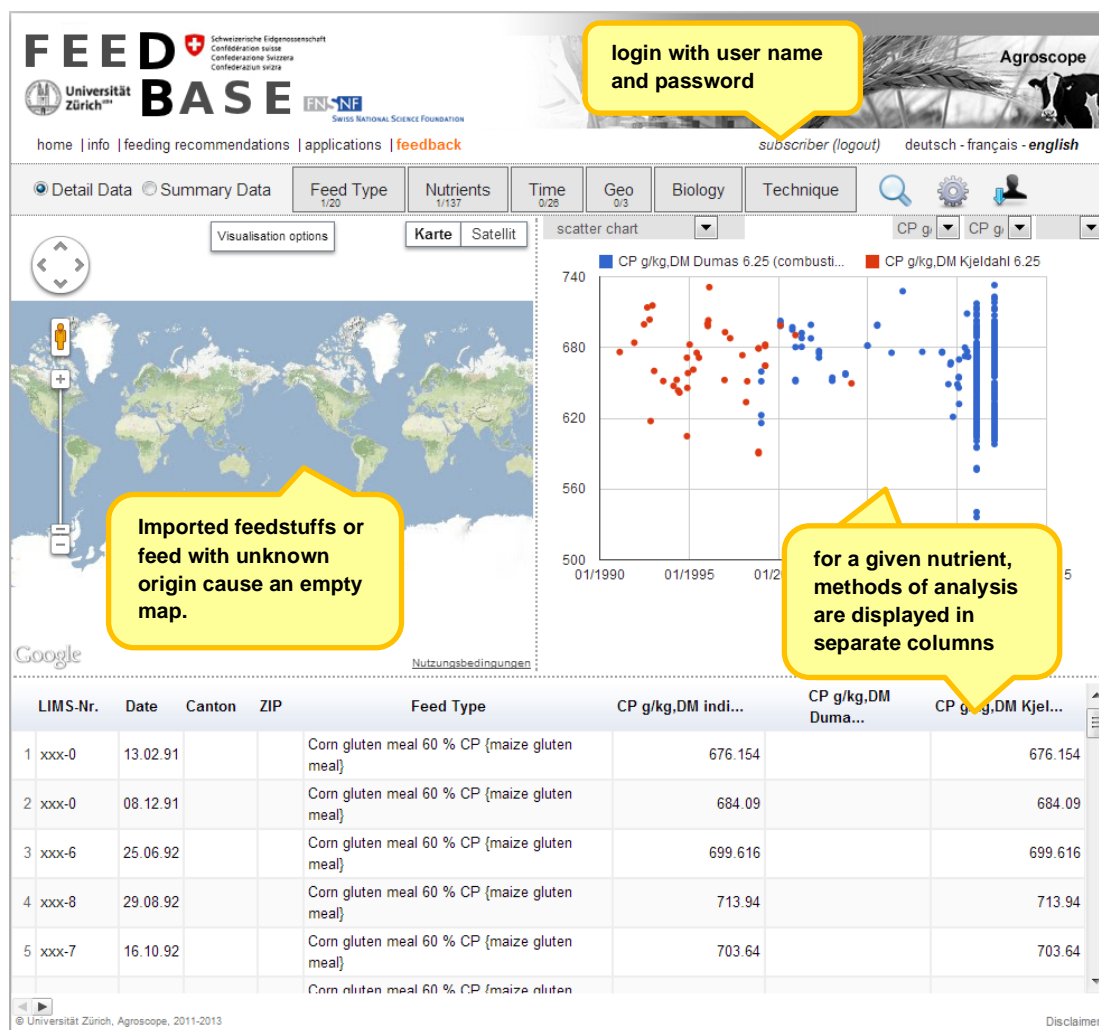
The color pattern of Ca-content indicates a mountain-valley divide. Low Ca-contents prevail in low altitude locations.

## 5.2.4 View of Detail Data (raw materials, password protected)

Subscribers have in addition to the roughage survey access to Detail Data of raw materials. The same data views as described above are available. If for a given nutrient more than one chemical method has been applied, then the query result displays the nutrient in columns distinguished by method. Under the denomination **indicative**, the value for a given nutrient is aggregated over all methods according to a priority schema. This way, maximum flexibility in data analysis and interpretation is sustained.

The visualization of the variation patterns along the time axis (scatter plot) is of particular interest for data exploration. For instance, possible time trends become manifest. The extent of observed variations provides the necessary indications for determining security margins. Also it proves to be a useful tool for outlier detection.

Query result of 578 samples of corn gluten meal 60 % (password protected)



## 6. Create user defined top queries (password protected)

In the password protected mode, frequently used feed and nutrient combinations can be saved as user defined top query for later reuse. These queries are stored on the home page under the tab **my queries**. To create a personalized query, the usual query construction schema as described above applies, i.e. select feed and nutrient options and run the query. Then click on the button **save your query**. In the appearing overlay window, subscribers are prompted to provide a description for the active query under which the query is stored for later use. Personalized queries can be modified or deleted without any restriction.

Personalized, saved query profiles shorten the effort to construct queries if the same feed and nutrient combinations are repeatedly and frequently used. In combination with the export function, these tailor-made queries prove to be very useful.

Save user defined top query

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Detail Data Summary Data Feed Type 71/616 Nutrients 25/255 Time Geo Biology Technique

	DM g/kg	CP g/kg,DM	LYS g/kg,DM	MET g/kg,DM	CYS g/kg,DM	THR g/kg,DM	TRP g/kg,DM	ILE g/kg,DM	LEU g/kg,DM	PHE g/kg,DM
1 Blood meal	940	952.461	84.125	14.108	14.374	45.645	13.793	13.999	122.214	63.54
2 Casein powder, Ca rich	940	943.327	77.744	29.435	3.646	39.837	12.074	47.933	91.17	47.1
3 Casein powder, Na rich	940	943.095	78.84	30.135	3.801	40.18	12.212	49.085	93.555	46.80
4 Feather meal hydrolysed	930	867.256	19.799	9.643	51.294	41.035	5.919	38.983	74.376	44.1
5 Wheat gluten	930	860.634	12.897	13.22	17.68	20.851	7.798	29.718	58.898	44.38
6 Potato protein	900	833.51	61.479	18.684	12.524	45.203	10.482	45.626	82.029	53.51

login with user name and password

save top query

Please, provide description for your query. The query will be placed in the title page under 'My Queries'.

Amino acids

cancel ok

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Detail Data Summary Data Feed Type 0/616 Nutrients 0/255 Time Geo Biology Technique

Top Queries My Queries

1) Amino acids

## 7. Downloads (password protected)

A click on the button **Feeding recommendations** and **Applications** redirects subscribers to the website of Agroscope where documents and Excel-files can be downloaded.

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Detail Data Summary Data Feed Type 0/616 Nutrients 0/255 Time Geo Biology Technique

Top Queries My Queries

1) Amino acids

Unfortunately, these downloads are *not available in English yet*. English speaking subscribers have to switch to German or French for downloads.

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## 8. Contact

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