Increased Sustainable Performance with Cattle Genetics Adapted to Grassland

Alizée Sauron, International Project Manager
The key to long term success

Herd
Choice of the breed adapted to the environmental and climatic conditions

People
Essential nutrient intakes for human health

Society
Economic development and poverty reduction

Environment
Respect and improvement of the environment and animal health

Country
Economic independence in the import of fodder and supplements

Planet
Responsible production in keeping with environmental and climate change
Sustainable Performance

Economic Growth

Responsible Production

Health Impact
Economic Growth

What does the breeder want?

- Long-lasting income
- Lifetime
- Strong and robust
- Dual purposes
- Heat resistancy
- Pasture adapted
Economic Growth

- Long productive life of a dairy cow is cost effective
- Amortize the rearing phase costs
  - Breeding
  - Veterinary (vaccination)
  - Feeding
- Optimize the genetic potential which is truly expressed from the 3rd lactation
- Mortality rate of dairy cows in Switzerland: 2%
Economic Growth

- Farmers need cows able to walk kilometers, e.g. to go to the Alps
- Resistant to disease – lower veterinary costs
- Still produce with low-input – self-reliant
- Robust cows = insurance and exchangeable asset

Keleki, the Alps, Switzerland. 2017
Economic Growth

For the breeder:
- Excellent growth intensity of heifers
- Good milk yield
- Sale of heifers and sale of dairy x beef breed crosses
- Surplus heifers as breeding animals

For the society:
Level of self-sufficiency in Switzerland in 2014 for
- animal products 100 %
  - Milk & milk products 115 %
  - Veal 98 %
  - Beef 86 %
Economic Growth

Swiss High School of Agriculture – Project Grassland Cow Genetics 2007 -2010
**Economic Growth**

**DISTRIBUTION OF FEEDSTUFFS USED**

- BY-PRODUCTS: 1%
- CEREAL GRAINS: 2%
- COMPOUND FEED: 6%
- ROUGHAGE: 91%

**FEEDING BASKETS (% CONSTITUENTS) OF DIFFERENT FEEDING SYSTEMS**

<table>
<thead>
<tr>
<th>Feeding System</th>
<th>Pasture - mountain</th>
<th>Pasture - lowland and hill country</th>
<th>Grass and hay</th>
<th>All silage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>0%</td>
<td>10%</td>
<td>30%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Health Impact

What does the consumer want?

Healthy nutrients

Less medication

Well-being

Meat & milk quality
Health Impact

Breeding for well adapted and pasture cows

Grass-fed beef is higher in:
- B-vitamins and vitamin E, K
- beta-carotene
- trace minerals like magnesium, calcium, and selenium

Milk fat from grass-based diets is healthier for the human diet because it has more:
- Conjugated linoleic acid
- Omega 3

International Comparison
Amount of concentrate per kilogram of milk

<table>
<thead>
<tr>
<th>Country</th>
<th>Amount of Concentrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>400 g de concentrés</td>
</tr>
<tr>
<td>Germany, Netherland, Danemark</td>
<td>300 g de concentrés</td>
</tr>
<tr>
<td>France</td>
<td>200 g de concentrés</td>
</tr>
<tr>
<td>Switzerland</td>
<td>100 g de concentrés</td>
</tr>
</tbody>
</table>

Swissmilk 2017
Health Impact

Breeding pasture and robust cows:
- Less stress, better performance
- No need of hormones
- No antibiotics for growth performance
- Less medication

-> Better for human health

Oeschinensee, Switzerland
Health Impact

Breeding for udder health and milk quality

- High SCC Impact of cheese yield, texture and taste
- Choosing the genes for beta casein - A2 genes better milk
- Breed selection for %fat and %protein in the milk
- Attached udder and good conformation

According to IFCN Dairy Report 2017
Health Impact

The right breed in the right environment:

- Increased optimal longevity, fertility and health of the cow
- Stress resistant can insure cattle production
- Robustness capacity of self-regulation in environments -> easy to care for
- Added-value or public and ecological services
- Culture and tourism

Switzerland produces more than 450 cheese varieties
200,000 tonnes of cheese are made in Switzerland
Responsible production

What does society want?

Mitigation and adaptation

Resilient

Best genetics

Less input

Breeder traditions

Grassland Benefits
Responsible production

Breeding to face temperature variations

Modeste, breeder in Burkina Faso

Swiss High School of Agriculture – Project Grassland Cow Genetics 2007 -2010
Responsible production

Breeds adapted to pasture

- No competition with human-edible concentrate feed - Feed no Food
- Use of land pasture
- Breeds which have a great feed conversion of dry matter feed

“My herd is eating higher dry matter intakes with fewer metabolic disorders and more efficient production and reproduction.” Anton Smit, President Brown Swiss Breeder, South Africa

Cow in pasture in South Africa; Anton Smit
Responsible production

Use of the natural resources

- Animal manure as nutrient
- Soil fertility and quality through natural process
- Sustain natural pasture and terrestrial ecosystems
- Seed scarification and dispersal
- Shrub and fire control
- Part of the landscape

Simmental cows on Pasture in the Alps
Responsible production

Swiss Family Farming – 80% are members of breeding associations

Swissgenetics is a farmer cooperative

- Choose the best genetics for their environment
- Participate in the definition of the breeding goals
- Invest in their chosen breed for long-term impact

Breeding tradition

Swissmilk 2018
Responsible production

Cattle farming is a long process
Switzerland has a strong tradition
- Quality and strong services
- Genomic selection
- Reproduction technologies:
  - embryo transfer
  - semen sexing
  - sperm vitality
- Ex situ conservation

Non Return Rates 56 Days

Swissgenetics Statistics 2017
The ideal breed for your production system

<table>
<thead>
<tr>
<th>Dual-purpose breeds</th>
<th>Dairy breeds</th>
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<tbody>
<tr>
<td></td>
<td>Brown Swiss</td>
</tr>
<tr>
<td>Simmental</td>
<td>+++</td>
</tr>
<tr>
<td>Swiss Fleckvieh</td>
<td>+++</td>
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<tr>
<td>Original Braunvieh</td>
<td>+++</td>
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<tr>
<td>Eringer</td>
<td>+</td>
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<tr>
<td>Grauvieh</td>
<td>+</td>
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<tr>
<td>Fertility</td>
<td>+++</td>
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<tr>
<td>Cheese / Protein</td>
<td>+++</td>
</tr>
<tr>
<td>Milk production</td>
<td>+</td>
</tr>
<tr>
<td>Udder health</td>
<td>+++</td>
</tr>
<tr>
<td>Meat production</td>
<td>+++</td>
</tr>
<tr>
<td>Lifetime</td>
<td>+++</td>
</tr>
<tr>
<td>Heat resistancy</td>
<td>++</td>
</tr>
<tr>
<td>Conformation</td>
<td>+++</td>
</tr>
<tr>
<td>Robustness</td>
<td>+++</td>
</tr>
<tr>
<td>Pasture</td>
<td>+++</td>
</tr>
</tbody>
</table>

+++ = Excellent, ++ = Very Good, + = Good, / = Not relevant, * = No data