



Sustainable Farm Animal Breeding Technology Platform (FABRE-TP)

Benedendorpsweg 98, NL-6862 WL OOSTERBEEK, The Netherlands

Tel: +31 26 339 15 38, Fax: +31 26 339 15 39, E-mail: fabretp@fabretp.org, Web: <http://www.fabretp.org>

Minutes

Dutch FABRE TP discussion Monday 4 June 2007. 14-17 h. Utrecht, Jaarbeurs.

Participants: Gerard Albers (Hendrix Genetics BV), Louise Boekhorst (Dutch Fur Breeders Association), Ronald Burggrave (Van Haeringen Laboratorium), Ruud Duijghuijsen (Animal Science Group Wageningen University and Research Centre), Hanneke Feitsma (Institute for Pig Genetics), Sipke-Joost Hiemstra (Centre for Genetic Resources, Wageningen University and Research Centre), Hans Komen (ABGC, Wageningen University), Jan Merks (Institute for Pig Genetics, TOPIGS), Anne-Marie Neeteson (European Forum of Farm Animal Breeders), Han Smits (AIM World wide), Nicoline Soede (Animal Science Group, Wageningen University), Celia Steegman (Ministry of Agriculture), Johan van Arendonk (ABGC Wageningen University), Lambert Westerlaken (Knowledge Directorate Ede, Ministry of Agriculture), Hendrik Wevers (Pig Activity Center).

The afternoon starts with presentations on FABRE TP (Anne-Marie Neeteson, for Andrea Rosati), Dutch breeding research and education (Johan van Arendonk), and Dutch breeding industry (Jan Merks).

Education and research

Agricultural education has a long and strong history in the Netherlands, providing education at the low, medium, higher and university level. The research and university training in animal breeding has recently merged into one organisation: Animal Breeding and Genetics Center of Wageningen UR (Wageningen University and Lelystad). They have a strong position in capacity building (MSc and PhD). Teaching takes place in English – recently an international Erasmus Mundi programme has been established. A large % of the PhD training is given to international students, there is an abundance of international courses and participation in EU training sites. Veterinarians are educated at Utrecht University. Reproduction research is concentrated in Utrecht and Wageningen, but suffering from rapidly decreasing budgets. Dutch agricultural basic research organisations run (mostly 4 year) research programmes that have to be bid for – there is no core funding per institute (only a general 15% core budget for all agricultural research institutes) and the business units are expected to make 10% profit annually. Also Wageningen University has moved into the budget system, whereby the funding per student needs to be complemented with additional funding in order to cover the costs and the university overhead contribution. Breeding research tends to become more and more an ‘industry responsibility’. Extra funding comes from bids with among others the Ministry of Economic Affairs, European research and training programmes, Dutch Science Organisation (NWO), Dutch Science and Technology Foundation (STW), and from industry budgets. University education from annually 100 animal science students (MSc), and 225 veterinarian students result in annually 210 vets, 50 vet PhDs, 400 animal production BScs, 90 animal production MScs, 20 animal production PhDs. The Animal Breeding and Genomics centre of Wageningen UR (Lelystad and Wageningen) is the main training and research group in the field of animal breeding and reproduction unit represent 30 scientific staff (researchers including postdocs), an education budget in breeding and reproduction of € 1 mil, and research budget of € 5-7 mil.

The ‘industry’

The Dutch situation in animal breeding and reproduction can be characterised by a few players. Cooperative Pigure group (pigs) has >80% market share in NL and 8-10% globally. Cooperative CRV (dairy and beef cattle) has >70% market share in NL and 5% globally. The export port folios are growing shares of their activities. Hendrix Genetics is one of the two global poultry players, representing 40% of world layer breeding, 5 and 25 % of global broiler respectively turkey breeding, and 6-8 % of global pig breeding. Altapon is a large, rapidly growing international cattle breeding organisation. Furthermore, the Netherlands have some 10-20 smaller AI organisations in cattle and pigs (e.g. KI Samen, KI Limburg, KI Oost). The Dutch aquaculture society is representing several aquaculture organizations, the largest being Royaal The Dutch fur animal society is representing mink and fox farms. In The Netherlands, there are about 200 farms who have a market share of 10% globally, where the fur production of Europe is app. 50% of the global fur production. The Royal Warmblood Studbook of the Netherlands has 30,000 members of which 10,000 are breeders (15,000 1st inseminations, 250 stallions annually).

The Dutch Rare Breeds society (SZH) represents a large range of breeds organisations – specialists from industry actively participate in SZH. An active genetics preservation programme is applied in the Netherlands, partly covered by government funding (gov funding for rare breeds, industry pay own input , 2 positions , x € annually for research, education and storage/use of semen/embryos). The large pig , poultry and cattle breeding organisations have in house or outsourced , independent (IPG) research units. Applied research and development and breeding programmes of the three major organisations account for € 15 million annually. In general , the Dutch breeding organisations have large input in R&D. There is a strong tradition of collaboration between research and industry – part of the budget mentioned is outsourced with the research partners mentioned above. Quantitative genetics , ICT and reproduction have been driving the design of the breeding programmes.

Characterisation of Dutch breeding research and industry:

- § strong international spin off, comparable to the situation in Dutch breeding potato, where a relatively large part of the activity consist of breeding activities.
- § knowledge intensive
- § short term financing – therefore perspective for application is needed

Discussion

- § Regarding both breeding and diversity it is of utmost important to maintain the various possibilities, and to do this as efficient as possible (sustainable, competitive use and maintenance of variety). It is in the interest of all as breeding works from diversity. Therefore, it is necessary to think ' out of the box', wonder what scenarios might come. Technology development (genetics/genomics, reproduction/biology, ICT) is key, either to be able to understand what is happening in the world, make good risk assessments, and to be able to apply under our conditions when the benefits of a new technology (this could be a reproduction technology for genetic preservation, a new pathway to ensure safer food, other...)
- § There is a strong need for more precompetitive research, esp. in new reproduction techniques with no specific outlook on immediate or short term application.
- § Dialogue with society and transparency about research, breeding goal and possibilities and intentions for implementation are key.
- § Regulatory developments and research developments need to be finetuned – therefore good relationships and dialogue between the players at stake is important.

Opportunities

Quantitative genetics, ICT and reproduction have been driving the design of breeding programmes. New developments offer opportunities for:

- § More accurate breeding values
- § Improved prediction of performance
- § Improved dissemination

This requires investments in

- § Genomics
- § Quantitative genetics and
- § 'Biology'
- § Reproduction technology

The needs for a developed (**Dutch**) **society** are

- § **Transparent**
 - § **Precompetitive**
 - § **Knowledge building**
 - § **Curiosity driven**
- } **research in animal breeding, reproduction and biology**

In order to be able to

- § React to **society demand of tomorrow** not known today
- § Have a **sound knowledge base**
- § **Judge the pro's and contra's** of new technologies (policy)
- § **Apply** new technologies (provided they are appreciated by society)

This implies that value free research in new technologies is important. Transparency and dialogue with society are important for the development of this research.

The priorities for the **Dutch breeding industry** are:

- Health and Welfare of animals
- Quality and safety of animal products
- Efficient production & low cost price
- Reproduction technology

§ **High level education** of “breeding and reproduction” BSc, MSc en PhD students

§ Participation in European and/or worldwide **Network of research and industries** involved in breeding and reproduction

§ Pre-competitive **SNP platforms/technology** available

§ **Quantitative genetics research**: improved statistics & new traits (support sustainability and balanced breeding)

§ **Assisted reproductive techniques** for safe and efficient transport and storage of animal genetics germplasm

§ **Dialogue with society** about new technologies for breeding & reproduction

- Transparency
- Dialogue with society/stakeholders