SCAR Collaborative Working Group

Sustainable Animal Production

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Summary

SCAR CWG SAP Workshop
Livestock farming in Europe: From regional farming systems to a common sustainable future

30 Nov. / 1 Dec. 2023 at INIA-CSIC headquarters, Avenida Padre Huidobro, Madrid

Host: Esther Esteban Rodrigo, Guy Vancanneyt, Susana Astiz, INIA CSIC

Chair: Bernhard Polten, BMEL, Germany

The workshop in a nutshell

This workshop served to discuss how the future of livestock farming should look like, as part of a common European vision of agriculture. 70 participants, scientists, farmers, industry and public service representatives were present. Basis for the discussions were four existing livestock systems, which were presented by a team of a farmer and a scientist each. Keynote speeches were an outlook on livestock from the perspective of DG AGRI and a presentation of the European scenario study Ten Years for Agroecology (TYFA).
Breakout group discussions dealt with the question, in what respect the presented livestock systems were sustainable or not, and whether they could be regarded as exemplary for other countries and for the future. The discussions‘ aim was to contribute to a process leading to a common vision of European livestock farming in the future.

There was agreement that

1. Livestock has the potential to make significant contributions to tackle the challenges that the European agri-food system is facing today.
2. Finding and implementing sustainable solutions for the agri-food system requires collaboration and efforts across society as a whole.
3. R&I have a key role to play in designing sustainable farming systems, but still face the challenge of providing a practical method to assess sustainability.
4. In order to efficiently develop sustainable solutions for livestock, it is necessary to have a common vision of European livestock farming in the future.

Keynote I: Delivering Europe's Green Deal and Farm to Fork Policies: reflections on livestock sustainability

By Valerio Abbadessa, DG AGRI

Valerio gave a brief overview over the present situation: the decrease of emissions from agriculture since 1990, expected consumer behaviour, leading to decreased domestic consumption of meat and dairy products, and the EU policies in action for sustainable agri-food systems (e.g. F2F Strategy and Organic Action Plan). He stressed that livestock farming can be sustainable but that the transition to a more sustainable food system must not be postponed.

Research and Innovation are key enablers, also to make the sector more resilient to climate change. The need to step up efforts must be recognised, as research takes time.

Take home messages:

- Moving towards sustainable agriculture and food systems, as requested under the Green Deal and the F2F Strategy, is among the important challenges of our time. EU policies provide not only obligations, but also opportunities for the necessary transition.
- The transition must be just and inclusive.
- The R&I community needs to fill gaps and provide evidence-based knowledge to offer options or solutions to farmers and inform policy makers and stakeholders.
- The role of policy-makers will be to support the livestock farming sector in anticipating and speeding up the necessary changes, and to provide the appropriate regulatory framework and incentives to favour the transition.
- Operators must communicate clearly and in a transparent way to consumers.
- The environmental ambition of the Green Deal will not be achieved by Europe acting alone.
- EU R&I funding and policies are in place to enable and operationalise transition pathways and redesign farming systems, and more generally food systems.

Common challenges:

- Bridging studies (bridging between projects, disciplines and perspectives)
- Communication and exchange of data between areas of application
- Communication between disciplines. Need to be approached from a multidisciplinary perspective
- Develop strong methodology integration approaches and consider trade-offs
- Scale up and implement the processes and technologies adapted to the local context. Social/territorial aspects to be taken into account

Keynote II: Ten Years for Agroecology (TYFA)

By Pierre-Marie Aubert, IDDRI, France

Pierre-Marie presented TYFA, an agro-ecological project with the aim to tackle the challenges of the European agri-food system in a coherent manner by 2050.

Key assumptions are:

1) A fertility management at the territorial level that depends on the suspension of soybean and plant protein import, on the reintroduction of legumes into crop rotations and on the re-territorialisation of livestock systems in cropland areas.

2) The phase-out of synthetic pesticides and the extensification of crop production – all year soil cover: using organic agriculture as a reference.

3) The redeployment of natural grasslands across the European territory and the development of agro-ecological infrastructures to cover 10% of cropland.

4) The extensification of livestock production (ruminants and granivores) and the limitation of feed/food competition, resulting in a significant reduction in granivore numbers and a moderate reduction in herbivore numbers.

5) The adoption of healthier, more balanced diets according to nutrient recommendations. This includes a reduction in the consumption of animal products and an increase in plant proteins along with an increase in fruit and vegetables.

6) Priority is given to human food, then animal feed, then non-food uses.

TYFA sees a potential in shifting the provision of nitrogen to more natural sources (leguminoses and animal manure) and to use livestock to increase circularity in the food system („a livestock on leftovers“). Moreover, a reduced consumption of animal products would in turn lead to a reduced amount of feed that needs to be produced. The role of ruminants and permanent grasslands should be understood in relation to what they bring to the crop system. As a consequence, relatively more ruminant meat would be consumed than in the EAT-Lancet planetary diet. Based on TYFA, the impact of ruminants on climate change need to be revised and put in a wider context in which the trade-off with nitrogen management and associated nitrous oxide emissions should be accounted for.

Despite an induced decline in production of 35% compared to 2010 (in Kcal), this scenario:

– Feeds Europeans healthily while maintaining export capacity

– Reduces Europe’s global food footprint

– Results in a 40% reduction in agricultural GHG emissions

– Helps to restore biodiversity and to protect natural resources

More aspects from TYFA concerning livestock: *Grass and Forage Science*, 2022, 77, 257–269. https://doi.org/10.1111/gfs.12597).

Disclaimer: The results of the TYFA project do not necessarily reflect the opinion of the SCAR CWG SAP.

Presentation of four regional livestock farming systems

Presentation on dairy cattle (Sweden)

Sigrid Ägenäs, Swedish Univ. of Agric. Sciences and Anna Samuelsson, dairy farmer

Kallset farm is a conventional, family-owned farm with 270 dairy cows and own production of biogas. Milking is done in an automated system (robot). Four employees are hired full time, year-round.

Sigrid described that being a nordic country, stretching 1,600 km in north-south direction, the latitude has strong influence on the choice of crops grown. Ley is commonly used on arable land, with shares increasing from 9% in the south to 67% in the north. It is used for feed and has a positive effect on soil carbon content. Ruminants stand out in the use of Swedish agricultural land, because their feed (forage) makes up the main part of the land use.

Anna's description of her farm reflects what many Swedes are proud of: There is a focus on preventive measures in animal welfare and breeding. For instance, cows have to be on pasture for three months per year, and farms receive a „clawcoin" if foot health is monitored. There is a common interest in the restriced use of antibiotics. Last but not least, all stakeholders are involved in long-term collaboration concerning the development of the sector.

Presentation on laying hens (The Netherlands):

Clark Halpern, Wageningen University and Ruud Zanders, farmer and Co-founder of Kipster

Kipster is a Dutch company that produces eggs by systematically feeding leftover raw materials and foodstuffs. This avoids food:feed competition, and it gives the laying hens a significant role in a circular system.

Clark's research looks at farming systems using a holistic approach. The current agri-food system appears to be locked in a linear way of thinking. A better use of resources can be achieved through a shift towards circularity. With its ability to upcycle by-products and waste, livestock can increase the resource efficiency of agri-food systems. Utilising its full potential, such a system could require even less land than would be necessary for a vegan diet.

Ruud pointed out that it is an ethical issue to feed animals biomass that could also directly be eaten by humans. Consequently, Ruud questions European consumer behaviour. He believes that, in wealthy societies, demand should not necessarily be at the center of production. Instead, consumers should eat what can be produced within the planetary boundaries. In addition, animal welfare and climate neutrality play a central role at Kipster.

Further information: *Journal of Cleaner Production*, 2019, *240*. https://doi.org/10.1016/j.jclepro.2019.118241

Presentation on sheep (Estonia)

Katrin Tähepõld, ELKL and Mirjam Pikkmets, sheep farmer and breeder

Aaduni farm is a mixed farm with dairy cattle, laying hens and sheep. Due to the low economic return, sheep in Estonia are typically kept on marginal land, as a secondary business. More than 50% of Estonian sheep are certified organic.

Katrin explained that the typical Estonian sheep farmer started in the 1990s, after the collapse of communism in the Eastern Bloc. Due to this history, there is no traditional knowledge to build on. Farms are family-owned and small (50-100 ewes). Lambs generally are exported to western Europe for fattening. It was also mentioned that EU regulations are sometimes difficult to follow as some aspects hardly apply to Estonian conditions.

Mirjam started sheep farming with 20 ewes in 2016. At present, she keeps 100 sheep. Economy strongly depends on subsidies for grazing and/or organic farming. The wool is turned into yarn, or used as insulation material, mulch or fertiliser. Due to the climate, the animals are kept indoors for six or seven months of the year. Guardian dogs and protective fencing against wolves, bears and lynxes significantly contribute to the costs.

Presentation on pigs (Spain):

Elena Angón Sánchez, Univ. Córdoba and Javier García-Gudiño, farmer and researcher

The dehesa ecosystem is a traditional agro-forestry system, characterised by oaks and pasture. The trees provide shade and feed (acorns). Cattle, sheep and pigs are kept in extensive free range systems. The landscape is characterised by a high biodiversity.

Elena presented a scientific tool to assess the ecological efficiency of resource use in pig production in the dehesa. The tool is based on Life Cycle assessment (LCA) and Data Envelopment Analysis (DEA) and allows comparison between farms, also economically and technically. The research showed that the eco-efficieny of pig production in the dehesa was generally high or very high.

Javier presented the farm Finca Valdesequera, 700 ha large, with 600 sheep, 100 goats, 100 cows and 100 sows (Iberian breed). The multi-species approach uses the local natural resources in an efficient way. While pastures are best used by ruminants, the pigs use the acorns. Current challenges are related to climate change, the La Seca disease in oaks and the increase of stocking densities leading to higher environmental impact.

Further information: *Agriculture*, 2023, *13*, 1, 83, https://doi.org/10.3390/agriculture13010083)

The wider discussions focussed around three major themes:

Theme 1: The future role of livestock farming

- Livestock will be an essential part of agriculture also in the foreseeable future. Farm animals shall therefore also be part of the solution to today's challenges.
- The livestock sector is facing serious challenges and action is required urgently. However, there appear to be ways to transform livestock farming towards more sustainability.
- Being able to utilise wastes and residues, livestock has a high potential to play a central role in a resource efficient, circular bioeconomy.
- Livestock ecosystem services, for instance their role for biodiversity, seem to be underrepresented in the current debate.
- Methane emissions from ruminant livestock should also be seen in the context of the specific abilities/services this animal type provides.

Theme 2: Accept that we are all in the same boat.

- Collaboration across society, including farmers, science, politicians, consumers and industry representatives, is needed to make livestock farming more sustainable.
- The diversity of stakeholders and their differing perspectives and expectations are a particular challenge for a transition towards more sustainable livestock farming.
- Farmers have an essential role to play in making livestock farming more sustainable and should therefore be included in the process accordingly. However, the responsibility for a transition does not lie with the farmers alone.
- Being a farmer should be a desirable profession and highly regarded by society. Farmers will be needed in the future, even if they may be land managers first and food producers second.
- The transition towards sustainable systems is crucial not just for food production but for all ecosystem services, including, for instance, biodiversity, soil and water quality.
- To respect the planetary boundaries does not only mean to recognise that resources are limited here and now. It may also affect Europe's relation to the Global South and consideration of future generations.
- On the one hand, consumer preferences need to be respected, not only by the industry. But on the other hand, sustainable consumption is a prerequisite for sustainable production.
- There is a need to define what the aims are for the future of livestock farming in Europe: a common vision.

Theme 3: If you can't measure it, you can't manage it.

- Science is essential to provide the data and tools to design and assess sustainable solutions. This includes the development of practicable methods to measure sustainability.
- A particularly demanding task for science is the holistic perspective needed to assess sustainability. Academic assessment tools currently are often too long and detailed for practitioners. On the other hand, simplified sustainability assessment tools bear the risk to produce misleading results.
- In order to assess their sustainability, livestock farming systems must be seen in a context broad enough to properly cover also the ecoservices they have to offer, synergies and trade-offs.
- Diversity across farms has been impeding comparison of farm sustainability and makes the selection of the right evaluation tools even more challenging.
- A clear terminology needs to be established in order to develop the role of livestock in circular systems and to reduce feed:food competition: For instance, where shall the line be drawn between by-product and waste?
- Incomplete expertise and limited funding for research makes the implementation of sustainability assessment in agriculture even more difficult. This field requires future funding.
- Humans have to be careful about how they treat other living beings, and this includes how livestock is being treated.

Figure. The workshop participants

Participants

Abbadessa, Valerio (EC DG AGRI), Belgium; Agenäs, Sigrid (Swedish University of Agricultural Sciences), Sweden; Alvseike, Ole (Animalia- Norwegian Meat and Poultry Research Centre), Norway; Angón Sánchez de Pec, Elena (University Cordoba), Spain; Astiz, Susana (INIA-CSIC), Spain; Bassler, Arnd (Federal Office for Agriculture and Food), Germany; Bello Dronda, Jose Maria (NANTA S.A.U.), Spain; Bergschmidt, Angela (Thünen-Institute of Farm Economics), Germany; Bessa, Rui (Faculty of Veterinary Medicine, University of Lisbon), Portugal; Béthinger, Audrey (INRAE), France; Bhattarai, Ira (Natural Resources Institute Finland), Finland; Díaz de Otálora Aguirre, Xabier (Leibniz-Institut für Agrartechnik und Bioökonomie/ Universidad Politécnica de Valencia), Germany/Spain; Diez Córdova, Lucia T., Spain; Divanach, Françoise (Dutch ministry of agriculture, nature and food quality), Netherlands; Ekateriniadou, Loukia (Elgo), Greece; Ellermann-Kuegler, Karin (Verband der Landwirtschaftskammern, VLK), Germany; Erjavec, Ivana (Ministry of Agriculture, Forestry and Food), Slovenia; Fernandez Poza, Maria del Mar (ASEPRHU), Spain; Garcia-Gudiño, Javier (CICYTEX), Spain; Gickel, Julia (University of Veterinary Medicine Hannover), Germany; Gilliland, John (QUB), United Kingdom; Gomez Roya, Luis (INIA-CSIC), Spain; Granados Chapatte, Ana (FABRE TP/ATF), Belgium; Halpern, Clark (Wageningen University), Netherlands; Hernangómez , Arturo (ANPROGAPOR), Spain; Herron, Jonathan (TEAGASC), Ireland; Hippolyte, Isabelle (ANR), France; Hof, Susanne (OMIRA Milchunion Süd), Germany; Hofshagen, Merete (Norwegian Veterinary Institute), Norway; Ingrand, Stéphane (INRAE), France; Janning, Dr. Thomas (Lohmann & Co. AG / PHW-Gruppe), Germany; Jones, Mary-Katherine (Bioland Hof Backensholz), Germany; Juskiene, Violeta (Lithuanian University of Health Sciences), Lithuania; Karatzia, Maria-Anastasia (Hellenic Agricultural Organization), Greece; Khalil, Ibrahim (University College Dublin), Ireland; Klopcic, Marija (University of Ljubljana), Slovenia; Kotzia, Katerina (BLE), Germany; Kraujalyte, Vilma (The Ministry of Agriculture of Lithuania), Lithuania; Kuipers, Abele (Wageningen University & Research), Netherlands; Kurppa, Sirpa (Prof. emerita, f. Luke), Finland; Lasar, Christian (Agrar-Klimacheck), Germany; Merlot, Elodie (INRAE), France; Moreira, Olga (Instituto Nacional de Investigação Agrária e Veterinária - INIAV, IP), Portugal; Moretti, Michele (University of Pisa), Italy; Nielsen, Vivi Hunnicke (Aarhus University), Denmark; Norrby, Mattias (Swedish farmers' foundation for agricultural research), Sweden; Paliotta, Isabel (EEB), Belgium; Pardo Nieva, Guillermo (BC3 - Basque Centre for Climate Change), Spain; Pastierik, Ondrej (National Agricultural and Food Centre), Slovak Republic; Pérez Garnelo, Sonia (INIA-CSIC), Spain; Peskovicova, Dana (NPPC - National Agricultural and Food Center), Slovak Republic; Pikkmets, Mirjam (Estonian Sheep Breeder's Association), Estonia; Polten, Bernhard (BMEL), Germany; Rauw, Wendy Mercedes (INIA-CSIC), Spain; Rodríguez Valín, Elena (INIA-CSIC), Spain; Ruiz, Roberto (NEIKER), Spain; Samuelsson, Anna (Farmer and SLF), Sverige; Schons, Hans Peter (German Animal Breeders' Federation, ADT), Germany; Sidhu, Maan Singh (The Research Council of Norway), Norway; Studnitz, Merete (ICROFS), Denmark; Tähepöld, Katrin (Estonian Sheep Breeder's Association), Estonia; Timmers, Bas (Kipster), The Netherlands; Usva, Kirsi (Natural Resources Institute Finland), Finland; Verbič, Jože (Agricultural Institute of Slovenia), Slovenia; Weijenberg, Adinda (Kipster), The Netherlands; Windisch, Wilhelm (Technical University Munich), Germany; Wosnitza, Kirsten (Farmer), Germany; Zanders, Ruud (Kipster), The Netherlands; Zierul, Janina (BLE), Germany