EIP-AGRI Focus Group

Robust & Resilient Dairy Production Systems

Mini-paper – Sustainable (robust and resilient) systems of milk production for dairy cows

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1. Introduction

Sustainable agriculture concepts vary from securing global and local resources to maintaining the functional integrity of farming systems. Many different terms have been used to address the sustainability of farming systems. Discussions on sustainability may result in apparently contrasting views on intensification versus extensification, land sharing versus land sparing etc. In order to develop more sustainable systems, creativity and out-of-the-box thinking is necessary and no agricultural technology can be labelled as being good or bad. The soil, crops, farmers, landscape and product chains are different in each region and pose different challenges and possibilities for increasing sustainability. The principles of sustainable agriculture can be explored by departing from the concept of resilience.

Resilience is the capacity of a system to endure disturbances and at the same time maintain its functions. More resilient systems can absorb larger disturbances without fundamentally changing their ways. Resilient systems can adapt, renew, self-organise and learn from change and disturbance. When loosing resilience, vulnerability increases and the system is no longer able to implement its functions. Resilience is the principle that connects both the production function of agricultural systems with the regulating and supporting functions that are needed to sustain production for future generations.

This mini paper aims to question the reasons why a specific system of milk production is chosen, how farmers can find a production system which best suits them, their farm, region and country. It will also challenge farmers to review,

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reflect and validate their current system of production especially in respect of the factors which affect the sustainable (robust and resilient) systems of milk production.

2. Discussion

2.1 Types of milk production system

A system of milk production is defined as 'how dairy cows are managed on a farm to produce milk for sale'. Systems of milk production can broadly be categorised as follows:

- Confinement or grazing outdoors.
- High output or low output.
- Conventional or organic.
- Extensive or intensive.

The systems of production vary between and within, countries, regions and on individual farms. In fact, there are no specific blueprints of production systems as there are differences between individual farms and the farmers who manage them.

2.2 What determines a system of milk production?

The following is a list of, among others, the many factors which determine the system of milk production practiced on an individual farm:

- Tradition, pride and passion, education, religion
- EU, national and local policy.
- Peer farmers.
- Advisory services - independent, state and embedded.
- Agricultural training and education.
- Financial feasibility – economics.
- Processors and products.
- The market - social demands.
- Export- and import possibilities
- Subsidies, premia and grants.
- Breed societies.
- Climate, pests, diseases.
- Logistics.
- Environmental legislation.
- Amount of arable- and grassland; soil type.
- Food safety and milk quality.
- Animal health and welfare.
- Simplicity/ease of management.
- Availability of labour.

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Dairy farms pass from generation to generation often without review or reflection, it is important to address these factors if more sustainable systems of milk production for the future are to be encouraged.

2.3 Factors necessary for a sustainable (robust and resilient) system of milk production

The following factors were identified as necessary or important in choosing a sustainable (robust and resilient) system of milk of production:

- A market for products.
- Farm suitability.
- Farmer suitability.
- Financial feasibility – economics.
- Climate.
- Country, region, site, soil
- Animal welfare and health.
- Advisory services - independent, state and embedded.
- Environmentally friendly.
- Accepted by society
- Animal genetics.
- Biodiversity.
- System approach – adaptational system instead of control system (control by means of pesticides, antibiotics, anthelmintics, artificial manure, etc.)

2.4 How to encourage dairy farmers to review their system of milk production?

Dairy farmers are often very passionate and protective about their system of milk production. Developing programmes to encourage farmers to review, reflect and validate their system of production are critical to establishing the sustainable systems of production of the future. The adoption of such programmes should commence at EU / national government level and filter down through advisory systems to farmer level, there would be multiple stake holder participation.

Table 1: Stakeholder roles for a programme to encourage farmers to review, reflect and validate their system of milk production

Stakeholder	Role
EU / National government	Create, implement, validate.
Research	Create, model, validate.
Advisers	Facilitate, advise.
Farmers	Participate, create, commit, implement, evaluate/monitor.
Consumers / Regional community/NGO	Opinion, commit, cooperate.

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Processors/Retailers/Banks	Market feedback, financial support, co-operation.

A well-researched farmer friendly framework programme would encourage dairy farmers to reflect on the current systems of production and help develop sustainable milk production systems of the future.

What are the success and fail factors?

Success in encouraging dairy farmers to review their system of milk production may be voluntary (carrot) or penalty (stick) based. Financial incentives could be funded by the various stakeholders. The success factors from more sustainable systems of milk production will filter from at EU/national level to local/regional to individual farmer level.

The fail factors which will challenge the programme are tradition, bureaucracy, time constraints, fear of change, missing indicators, perceived economic risk, lack of clarity and low milk price. To address such factors the provision of a framework programme which is; easy to understand, contains positive indicators, had data integration and has a monetary incentive preferably facilitated by an economic/budget advisory service.

3. Conclusions

There is no right or wrong system of milk production, instead there are many good and sustainable ways of producing milk from dairy cows. The system of production for a specific country, region or farm must be sustainable (robust and resilient) and provide good income and return on investment for the dairy farmer while maximising animal welfare, health, social and environmental benefits. Developing programmes to encourage farmers to review, reflect and validate their current system of milk production are critical to achieving 'best practice' in the sustainable (robust & resilient) milk production systems of the future.

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