

Session 1.

High output dairy farming systems

Role of grasslands and forages In high output dairy farming systems from a dairy chain perspective

Boer P.

Priorities for the European R&D agenda with regard to sustainable Intensification In dairy farming

Keatinge R.

Grassland and forages in high output dairy farming systems in Flanders and the Netherlands

Van den Pol-van Dasselaar A., Aarts H.F.M., De Caestecker E., De Vliegheer A., Elgersma A., Reheul D., Reijneveld J.A., Vaes R. and Verloop J.

Fifty years of forage supply on dairy farms in the Netherlands

Van Dijk H., Schukking S. and Van der Berg R.

Portuguese dairy farming systems

Trindade H.

High output farming systems in Europe: the French case

Brocard V., Belot P.-E., Foray S., Perrot C. and Rouillé B.

Dairy farming systems and development paths in Slovenia

Klopčič M. and Kuipers A.

Dairy production systems in Finland

Virkajärvi P., Rinne M., Mononen J., Niskanen O., Järvenranta K. and Sairanen A.

Forage production and use in the dairy farming systems of Northern Italy

Mantovi P., Dal Prà A., Pacchioli M.T. and Ligabue M.

The effect of decreased N and P applications on herbage quality in the Netherlands

Abbink G.W., Reijneveld J.A. and Linders P.B.J.

The effects on performance of out-wintering replacement heifers in a high-output dairy system

Atkins N.A., Bleach E.C.L. and Sinclair L.A.

Development of a validity test for survey data on milk-from-grass from German dairy farms

Becker T.H., Blume L., Kayser M. and Isselstein J.

The effect of pasture allowance offered for different time durations on the dry matter intake of dairy cows

Cummins S., Lewis E., Pierce K.M. and Kennedy E.

Models for predicting effects of management factors on per-cow and per-hectare pasture intake by grazing dairy cows

Delagarde R., Delaby L., Peyraud J.L. and Faverdin P.

Herbage and milk production from a grass-only sward and grass-white clover swards in an intensive grass-based system

Egan M.J., Lynch M.B. and Hennessy D.

Developing mixed farming systems at regional level: examples from intensive dairy farming

Hanegraaf M.C., Vertès F., Corson M.S., Den Boer D.J., Moraine M. and Korevaar H.

Comparison of feeding time in barn and pasture under a given grass allowance in a system with robotic milking and strip grazing by using collected sensor data

Ipema A.H., Holshof G. and De Mol R.M.

Milk production in relation to farm organization

Jankowski K., Skrzyczyńska J., Wiśniewska-Kadżajan B., Sosnowski J., Malinowska E. and Kolczarek R.

Current state of the feeding systems on dairy farms in the Principality of Asturias (Spain)

Jiménez-Calderón J.D., Santiago C., Martínez-Fernández A. and Vicente F.

The behaviour and production of dairy cattle when offered green pasture or exercise pen

Jørgensen G.H.M., Eilertsen S.M., Hansen I. and Aanensen L.

Duration is important in the effect of pasture allowance restriction on subsequent milk production, in early lactation

Kennedy E., Delaby L., Horan B., Roche J. and Lewis E.

Achieving high milk production performance at grass with minimal concentrate supplementation with spring-calving dairy cows: actual performance compared to simulated performance

O'Donovan M., Ruelle E., Coughlan F. and Delaby L.

Synthesis of systems of European grassland typologies at plot, farm and region levels

Peeters A.

Using models to establish the most financially optimum expansion strategy for Irish dairy farms

Ruelle E., Delaby L., Wallace M. and Shalloo L.

The amount of maize in the feed ration influences milk composition in Northern Spain

Santiago C., Jiménez-Calderón J.D., González A., Vicente F. and Martínez-Fernández A.

Production pasture versus exercise and recreation pasture for cows in automatic milking systems

Spörndly E., Andersson S., Pavard N., Le Goc S.

Effect of indoor silage feeding on pasture time in a batch-milked automatic milking rotary system

Spörndly E. and Andersson Å.

Production and cow-traffic management during the pasture season in large herds with automatic milking

Spörndly E. and Karlsson M.

Application of grass and cow sensor data to support grazing management in high output systems

Zom R.L.G., Holshof G., Ipema A.H. and De Mol R.M.

Session 2.

Grassland and fodder crops in high output systems

Production potential of grassland and fodder crops in high-output systems in the Low Countries in north western Europe and how to deal with limiting factors

Reheul D., Coughlan M., De Cauwer B., Swanckaert J., Pannecouque J., D'Hose T.,

Van den Nest T., De Caestecker E., Vaes R., Peeters A., Baert J. and De Vlieghe A.

Possibilities and constraints for grazing in high output dairy systems

Hennessy D., Delaby L., Van den Pol-van Dasselaar A. and Shalloo L.

Intercropping maize and Caucasian clover to reduce environmental impact of maize silage production

Albrecht K.A., Ochsner T.E., Schwab A.R. and Jokela W.E.

Use of the Lifecorder+® sensor to assess grazing time of dairy cows

Allain C., Raynal J., Beck C., Delagarde R. and Brocard V.

- Yield and nutritive value of binary legume-grass mixtures under grazing
Bélanger G., Tremblay G.F., Dos Passos Bernardes A., Papadopoulos Y., Fillmore S., Lajeunesse J. and Duynisveld J.
- Farm-level phytodiversity of dairy farms is related to within-farm diversity of grassland management types
Breitsameter L. and Isselstein J.
- Improved potassium fertiliser recommendation for grasslands in the Netherlands
Bussink D.W., Van Middelkoop J.C., Holshof G. and Van der Draai H.
- How much milk is produced from pasture? Comparison of two calculation methods
Cleven M., Verhoeven A., Pries M., Berendonk C. and Wrage-Mönnig N.
- Exploitable yield potential of grasslands in the Netherlands
Cornelissen J.M.R., De Haan M.H.A., Hin C.J.A., Zijerveld E.J.M. and Philipsen A.P.
- Undersown tall fescue as a cover crop after forage maize in 2014
Cougnon M., George T. and Reheul D.
- Yield comparison of Italian ryegrass and winter rye sown as cover crops after forage maize
Cougnon M., Vandermoere S., De Vliegheer A. and Reheul D.
- Can lactobacilli producing ferulate esterase improve the nutritive value of grass and maize silage?
De Boever J.L., Dupon E., De Vliegheer A., De Campeneere S. and Latré J.
- Grass-clover under cutting conditions: a highly productive system of intensive, high quality forage production
De Vliegheer A. and D'Hose T.
- Type of grass influences clover proportion and production of grass-clover leys
De Wit J., Rietberg P. and Van Eekeren N.
- Pastur'Plan: a dynamic tool to support grazing management decision making in a rotational grazing system
Delaby L., Duboc G., Cloet E. and Martinot Y.
- Accuracy of the FeedPhone device for recording eating and rumination times in dairy cows
Delagarde R. and Lemonnier J.P.
- Phosphorus concentration and export by silage maize and cut grassland under temperate climate
D'Haene K., De Vliegheer A. and Hofman G.
- Competitive forbs in high-producing temporary grasslands with perennial ryegrass and red clover can increase plant diversity and herbage yield
Dhamala N.R., Søegaard K. and Eriksen J.
- Changes in vitamin and fatty acid contents in grass-red clover herbage after cutting
Elgersma A., Søegaard K. and Jensen S.K.
- Effect of different doses of an amendment and an organo-mineral fertiliser on the production of forage maize
Ferreiro-Domínguez N., Rigueiro-Rodríguez A. and Mosquera-Losada M.R.
- Effects of forage species and sward-lifting on compacted soil
Fychan R., Crotty F.V., Scullion J., Sanderson R. and Marley C.L.
- Differentiation of cultivars within pasture grasses with regard to leaf tensile strength
Goliński P. and Golińska B.
- An alternative system for classifying earliness in maize varieties in Sweden
Halling M.A.
- PastureBase Ireland – a National Grassland database for Ireland
Hanrahan L., Geoghegan A., O'Donovan M., Griffith V., Wallace M. and Shalloo L.

- Effect of cutting frequency of four red clover cultivars on forage yield and persistence
Hejduk S.
- Calibration of five rising plate meters in the Netherlands
Holshof G., Stienezen M.W.J. and Galama P.G.
- Grazing and difficult circumstances: economic benefits depend on milk price and grazing efficiency
Holshof G., Evers A.G., De Haan M.H.A. and Galama P.G.
- Different harvesting strategies and cultivar mixtures for grass silage production in Finland
Hyrkäs M., Sairanen A., Kykkänen S., Virkajärvi P. and Isolahti M.
- Performance and quality of legume monocultures and grass-legume mixtures during two dry years
Kizeková M., Jančová L., Dugátová Z., Čunderlík J., Kanianska R., Makovníková J. and Tomaškin J.
- The effect of potassium on dry matter production and nutritive value of grass on three different soil types
Kykkänen S., Virkajärvi P., Hyrkäs M., Järvenranta K., Kurki P. and Suomela R.
- Productive longevity of different alfalfa varieties in the Central non-Chernozem region
Lazarev N.N. and Starodubtseva A.M.
- Potential of fodder trees in high-output dairy systems
Luske B. and Van Eekeren N.
- A comparison of two grazing regimes during lactation for improving the sustainability of Latxa dairy sheep system
Mandaluniz N., Arranz J. and Ruiz R.
- The effects of cultivation date and method on the establishment of lucerne in the UK
Marley C.L., Scott M.B., Davies J.W., Sanderson R. and Fychan R.
- The effect of tetraploid and diploid perennial ryegrass swards sown with and without clover on milk and herbage production
McCarthy B., Dineen M., Guy C., Coughlan F. and Gilliland T.
- Alleviating soil compaction can increase grassland productivity: a demonstration project
McConnell D.A. and Evans C.
- Calibration of an automated grass height measurement tool equipped with global positioning system to enhance the precision of grass measurement in pasture-based farming systems
McSweeney D., Foley C., Halton P. and O'Brien B.
- The effect of different grass species and fertilization level in fodder galega mixtures
Meripöld H., Tamm U., Tamm S. and Vösa T.
- Forage quality screening of *Lolium multiflorum* Lam. cultivars appropriate for high carbohydrate rations
Müller J. and Jänicke H.
- Effect of chloride fertilisation on dietary cation-anion difference forage species
Nesheim L., Synnes O.M. and Langerud A.
- Establishing trampling-resistant mixed swards: a comparison of four seed mixtures
Nilsdotter-Linde N., Salomon E., Adolfsson N. and Spörndly E.
- Controlling docks (*Rumex obtusifolius* L.) using herbicides applied to seedling or established grassland
O'Donovan T., Casey I.A. and Humphreys J.
- Benchmarking European permanent grassland production and utilization at national and regional levels
O'Donovan M., Elsaesser M., Peeters A., Hulin S. and Brandsma J.

- Developing a predictive model for grass growth in grass-based milk production systems
Paillette C.A., Delaby L., Shalloo L., O'Connor D. and Hennessy D.
- Organic fertilization on mountain grassland
Pleša A., Rotar I., Păcurar F., Vidican R., Balázs A. and Stoian V.
- Effect of feeding system on cow milk fatty acids composition in a panel of Galician dairy farms
Resch-Zafra C., Pereira-Crespo S., Flores-Calvete G., Dagnac T., González L., Agruña M.J., Fernández-Lorenzo B. and Veiga M.
- Botanical composition of clover-grass silages affects milk yield in dairy cows
Røjen B.A. and Kristensen N.B.
- A soil and weather dependent estimator of the soil's capacity to supply nitrogen
Ros G.H., Bussink D.W. and Reijneveld J.A.
- Mineral fertilization on mountain grassland
Rotar I., Păcurar F., Vidican R., Mălinaș A. and Gliga A.
- The development of yield and digestibility of a grass mixture during primary growth and regrowth
Sairanen A. and Hyrkäs M.
- High productivity of perennial grasses with alfalfa mixtures in North-Eastern Romania
Samuil C., Muntianu I.C., Popovici C.I., Stavarache M. and Vintu V.
- Sward surface height estimation with a rising plate meter and the C-Dax Pasturemeter
Schori F.
- Predicting the harvest date of silage maize based on whole crop or cob dry matter contents
Schuppenies R., Pickert J. and Herrmann A.
- Genotypic variation in vernalisation response and autumn growth in forage grass species
Seppänen M.M., Jokela V., Uusitalo T., Korhonen P. and Virkajärvi P.
- The effect of cutting strategy on production and quality of high-yielding multispecies grasslands
Søgaard K. and Eriksen J.
- Milk production with or without protein supplement in combination with forage at two protein levels
Spörndly R. and Spörndly E.
- Influence of undigested and digested cattle slurry on grassland yield compared to mineral fertilizer
Tampere M., Kauer K., Keres I., Parol A., Pitk P., Selge A., Viiralt R. and Raave H.
- Herbage energy to protein ratio of binary and complex legume-grass mixtures
Tremblay G.F., Bélanger G., Simili Da Silva M., Lajeunesse J., Papadopoulos Y.A., Fillmore S.A.E. and Jobim C.C.
- Nitrogen fertilizer replacement value of concentrated liquid fraction on grassland and effects on farm level
Van Middelkoop J.C. and Holshof G.
- Optimizing N management through improving transitions of temporary grassland and maize in rotation
Verloop J. and Hilhorst J.
- Sward quality and yields of grassland in a dairy farm with reduced fertilizer N rates
Verloop J., Oenema J. and Geerts R.H.E.M.
- High productivity on *Nardus stricta* L. grasslands from the Carpathian Mountains of Romania
Vintu V., Samuil C., Saghin G. and Stavarache M.

Detection of genetic diversity for drought tolerance in perennial ryegrass (*Lolium perenne* L.)

Westermeier P., Wosnitza A., Willner E., Feuerstein U., Luesink W., Schulze S., Schum A. and Hartmann S.

Session 3.

High output and high (eco)efficiency

Eco-efficient pasture based dairy farm systems: a comparison of New Zealand, The Netherlands and Ireland

Pinxterhuis J.B., Beare M.H., Edwards G.R., Collins R.P., Dillon P. and Oenema J.

Quantifying sustainability of dairy farms with the DAIRYMAN-sustainability-index
Elsaesser M., Jilg T., Herrmann K., Boonen J., Debruyne L., Laidlaw A.S. and Aarts F.

Quantifying the environmental performance of individual dairy farms - the annual nutrient cycling assessment

Aarts H.F.M., De Haan M.H.A., Schröder J.J., Holster H.C., De Boer J.A., Reijs J.W., Oenema J., Hilhorst G.J., Sebek L.B., Verhoeven F.P.M. and Meerkerk B.

Eco-efficiency of grass-based dairy systems in Switzerland

Alig M., Sutter M. and Nemecek T.

Evaluation of dry matter yield of ryegrass varieties on Irish grassland farms

Byrne N., Berry D.P., Geoghegan A., Shalloo L., Gilliland T.J. and O'Donovan M.

Benefits of × *Festulolium* varieties in European agriculture

Cernoch V. and Groenbaek O.

Estimation of methane emissions by dairy cows feeding on diets based on Italian ryegrass or legume silages in two grazing seasons

Dachraoui M., Jiménez-Calderón J.D., Martínez-Fernández A. and Vicente F.

Trace elements supply and requirements in Dutch dairy farming

De Haas M.J.G., Den Boer D.J., Bussink D.W. and Van der Draai H.

No trade-off between root biomass and aboveground production in *Lolium perenne*

Deru J., Schilder H., Van der Schoot J.R. and Van Eekeren N.

Reduced tillage for silage maize on sand and clay soils: effect on yield and soil organic matter

Deru J., Van Schooten H., Huiting H. and Van der Weide R.

Productivity and herbage quality in two-species grass-legume mixtures under cutting

Elgersma A. and Søgaard K.

Herbage production in grazed grass-white clover plots: effect of N fertilizer application

Enríquez-Hidalgo D., Gilliland T.J. and Hennessy D.

Lucerne as an alternative protein source in southwest England: a Demo Farm perspective

Evans C. and McConnell D.A.

Concentrate supplementation and milking frequency in automated milking with grazing

Foley C., Shortall J. and O'Brien B.

Regional animal feed centre as an intermediary between fodder farming and milk production

Galama P., Van Walsum P.E.V., Hack-ten Broeke M.J.D., Cormont A. and Roelsma J.

Comparing the *in vivo* dry matter digestibility of perennial ryegrass in sheep and dairy cows

Garry B., Kennedy E., Baumont R., Boland T.M., Wright M.M., O'Donovan M. and Lewis E.

The use of radar images for detecting when grass is harvested and thereby improve grassland yield estimates

Grant K., Wagner M., Siegmund R. and Hartmann S.

Effect of sulphur fertilization on the rate of photosynthesis and yield of *Lolium × boucheanum* Kunth cultivated in monoculture and mixture with *Trifolium repens* L.

Grygierzec B., Szewczyk W. and Musiał K.

Concentrations of micro-nutrients in forage legumes and grasses harvested at different sites

Gustavsson A-M. and Nadeau E.

Economic and environmental viability of regionally growing feed concentrate replacers

Hack-ten Broeke M.J.D., Cormont A., Roelsma J., Galama P. and Van Walsum P.E.V.

Increasing the resource efficiency of permanent grassland: outcomes of an EIP-AGRI Focus Group

Hopkins A., Bailey J., Reheul D., Brandsma J., Pehrson I., Mosquera-Losada M.R. and Crespo D.G.

Capacity of the soil to decompose organic matter in old and young grasslands

Iepema G.L., Domhof B. and Van Eekeren N.

Farm-specific development plan: a tool to manage and improve individual dairy farms

Kohnen H., Boonen J., Van Vliet G. and Wengler F.

Impact of sowing date of maize catch crops on yield and environmental effects – a trade-off?

Komainda M., Herrmann A., Kluß C. and Taube F.

Species-rich grasslands for a higher biodiversity on highly productive dairy farms

Korevaar H. and Geerts R.H.E.M.

Partial replacement of grass silage with faba bean whole-crop silage in the diet of dairy cows

Lamminen M., Kokkonen T., Halmemies-Beauchet-Filleau A., Termonen T., Vanhatalo A. and Jaakkola S.

Regrowth pattern of *Lotus corniculatus* L. natural populations under limited irrigation

Lazaridou M., Abraham E.M., Karatassiou M. and Kostopoulou P.

Is it possible for large herds to graze while keeping a high milk yield level? The experience of two Belgian dairy farms

Lessire F., Hornick J.L. and Dufrasne I.

Working with farmers to make the most of soil nutrients for eco efficiency – The PROSOIL PROJECT

McCalman H.M., Powell H.G. and Buckingham S.E.

Perennial ryegrass variety ranking responses to inclusion of white clover and altered nitrogen fertility

McDonagh J., McEvoy M., Gilliland T.J. and O'Donovan M.

Forage pea yield after application of different rates of pig and cattle manure

Mosquera-Losada M.R., Rigueiro-Rodríguez A., Ferreiro-Domínguez N.

Some critical points of dairy farming based on grazing compared to indoor feeding systems

Nagy G., Felföldi J. and Vántus A.

Improving grassland management on commercial pilot dairy farms: the role of intensive coaching

Oenema J., Hilhorst G.J. and Van Ittersum M.K.

Economic impact of grazing dairy cows on farms equipped with an automatic milking system

Oudshoorn F.W., Brocard V. and Van den Pol-van Dasselaaar A.

Grass proves its value on Welsh dairy farms

Owen J.M.

Are there alternative paths towards more self-sufficient and resilient systems in dairy farms?

Peeters A., Delobel V. and Van der Ploeg J.D.

Performance of red clover mixtures in high output dairy systems: an agro-economical comparison

Rietberg P., De Wit J. and Van Eekeren N.

Element concentrations in forage plants grown on power station ash deposit

Simić A., Dželetović Ž., Vučković S., Geren H. and Mandić V.

White clover content and grassland productivity in simulated grazing systems

Van Eekeren N., Hoogsteen M., Deru J., De Wit J. and Lantinga E.

Effect of organic fertilization of maize forage on greenhouse gas emissions by dairy cows

Velarde-Guillén J., Jiménez-Calderón J.D., Martínez-Fernández A. and Vicente F.

Effect of harrowing and watering on disappearance of dung pats in pastures

Verwer C., Lenssinck F., Van Schooten H., Philipsen A.P. and Van Eekeren N.

Changes in land use resulting from diet modifications related to increasing milk yields

Wolf P., Prochnow A. and Berg W.

Synthesis

Conference synthesis

Isselstein J.