

Draft Programme Agricultural Research Forum 2013

Monday 11th March 2013	Arrival and Coffee	
	Room D.E. Williams I	Room D.E. Williams II
10:30-13:00	Session 1A Soils & Fertilizers Chairperson: Dr Stan Lalor	Session 1B Animal Reproduction Chairperson: Dr Trudee Fair
13:00– 14:00	Lunch in Restaurant	
14:00 -16:00	Session 2A Environnent & Emissions Chairperson: Dr Eimear Ruane	Session 2B Animal Nutrition Chairperson : Dr Alan Kelly
15:45-16:15	Tea: Foyer	
16:15- 18:15	Session 3A Production Systems & Economics Chairperson: Dr Paul Crosson	Session 3 B Molecular Genetics Chairperson: Dr Ruth Hamill
18:15	Review of conference and proposals for further development (D.E. Williams II)	
20:00	Conference Dinner (DE Williams 1)	

Tuesday 12th March 2013	Session 4 Animal Breeding	
08:30-10:30	Chairperson: Dr Alan Fahey	
10:30-11:00	Coffee: Foyer	
11:00 –13:00	Session 5A Grassland & Biodiversity Chairperson: Dr Emer Kenendy	Session 5B Animal Health 1 Chairperson: Michael Gottstein
13:00 – 14:15	Lunch in Restaurant	
14:15-16:45	Session 6A Grassland & Animal Production Chairperson: Dr Eva Lewis	Session 6B Animal Health 2 Chairperson: Dr Martin Danaher
16:15-16:45	Tea: Foyer	

Monday 11th March 2013

Session 1A: Soils and Fertilizers

Venue D.E. Williams I

**Chair Dr Stan Lalor, Teagasc, Crops, Environment and Land-Use
Research Centre, Johnstown Castle, Wexford**

10-minute Theatre & 5-Minute Discussion

10:30	Nutrient uptake in soil niches affected by plant species and drought stress <i>N.J. Hoekstra, J.A. Finn and A. Lüscher</i>	1
	Effects of soil type and climate on soil nitrogen supply and soil nitrogen utilisation by grass <i>N.T. McDonald, C.J. Watson, R.J. Laughlin, S.T.J. Lalor and D.P. Wall</i>	2
	Holstein Friesian versus Jersey crossbred cows-how does their respective live-weight and stocking-densities affect treading damage on poorly drained soils? <i>P. Tuohy, J. Humphreys, O. Fenton and N.M. Holden</i>	3
	Bacterial and fungal communities in the mycorrhizospheres of <i>Agrostis</i> , <i>Lolium</i> and <i>Plantago</i> respond to inoculation with arbuscular mycorrhizal fungi <i>J. Gahan and A. Schmalenberger</i>	4
	The microbial mobilisation of sulphur and phosphorous in biochar amended soil <i>A. Fox, W. Kwapinski and A. Schmalenberger</i>	5
	Assessing the potential for carbon sequestration in grazed Irish grasslands <i>Ó. Ní Choncubhair and G. Lanigan</i>	6
	Determining threshold values for grass field trafficability using the hybrid soil moisture deficit model <i>S.E. Vero, D.L. Antille, S.T.J. Lalor and N.M. Holden</i>	7
	An examination of forest productivity by farm soil category and system. <i>M. Ryan, V. Upton, N. Farrelly and C. O'Donoghue</i>	8
	3-Minute Presentations	
	Effect of sub-soiling or aeration/spiking of soils on herbage dry matter yield <i>E.G. O'Riordan and P. O'Kiely</i>	9
	Biological nitrification inhibition in the rhizosphere of contrasting plants <i>M.A. Harty, B.S. Griffiths, K.G. Richards and O. Schmidt.</i>	10
	Dicyandiamide (DCD) degradation in soil and implications for nitrification <i>E. Minet, K.G. Richards, E. Moynihan, F. Brennan, B. Griffiths, D. Rooney and C.J. Watson</i>	11

Monday 11th March 2013

Session 1B: Animal Reproduction

Venue D.E. Williams II

**Chair Dr Trudee Fair, School of Agriculture and Food Science,
University College Dublin, Belfield, Dublin.**

10-minute Theatre & 5-Minute Discussion

- 10:30 Risk factors associated with reproductive tract status
T. Carthy, A. Fitzgerald,, S. McParland, D.P. Berry, E.J. Williams, A.R. Cromie and D. Ryan 12
- Effect of pasture based systems on reproductive performance, sub-clinical endometritis and immune status. 13
H Watson, , ACO Evans and ST Butler
- The effect of genetic merit for fertility traits on dry matter intake, resumption of cyclicity and uterine health 14
S.G. Moore, A.C.O. Evans, P. Lonergan, T. Fair and S.T. Butler
- Expanding the dairy herd in pasture-based systems: the role for sexed semen use on virgin heifers 15
I.A. Hutchinson, L. Shalloo, and S.T. Butler.
- The bovine uterine proteome is associated with stage of cycle and changes in the concentration of systemic progesterone 16
S. Faulkner, G. Elia, P. O'Boyle, M. Dunn and D. Morris
- Twinning and multiple ovulations in Irish dairy and beef cows 17
A.M. Fitzgerald, T. Carthy, D.P. Berry, S. Coughlan, and D.P. Ryan.

3-Minute Presentations

- Expanding the dairy herd in pasture-based systems: the role for sexed semen use on virgin heifers and lactating dairy cows 18
I.A. Hutchinson, L. Shalloo, and S.T. Butler.
- The effect of genetic merit for fertility traits on the follicular fluid of dairy cows 19
S.G. Moore, A. O' Gorman, L. Brennan, A.C.O. Evans, P. Lonergan, T. Fair, and S.T. Butler
- Effect of progesterone supplementation in the luteal phase on pregnancy per artificial insemination in lactating dairy cows. 20
M.H. Parr, M.A. Crowe, P. Lonergan, A.C.O. Evans, D. Rizos, J.F. Roche and M.G. Diskin.
- Differential gene expression and alternative transcription in endometrial tissue of a lactating cow model of fertility 21
B. Moran, S.T. Butler, S.B. Cummins, S. Moore, D. McHugh and C.J. Creevey.

Monday 11th March 2013

Session 2A: Environment and Emissions

Venue D.E. Williams I

Chair Dr Eimear Ruane, Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork.

10-minute Theatre & 5-Minute Discussion

14:00 Cattle slurry application to grassland – collating recent research to give practical advice –
A Review 123
S Lalor

Nitrous oxide emissions from white clover based grassland used for dairy production
W. Burchill, D. Li, G. Lanigan, M. Williams and J. Humphreys 22

How does co-product allocation affect the carbon footprint of a high performing grass-
based milk production system?
D. O'Brien, B. Horan and L. Shalloo 23

Effect of retention time and feeding regime using dairy cow slurry and grass silage on
energy production from anaerobic digestion 24
S.R. Gilkinson and J.P. Frost

Evaluating the response to phosphorus fertilizer application rate and application method in
spring barley across a range of soil test P fertility levels 25
D.P. Wall and M. Plunkett

3-Minute Presentations

Modelling the surface of a paddock affected by urine deposition by dairy cows during
grazing 26
C. Paillette, L. Delaby, L. Shalloo, D. O'Connor and D. Hennessy

Methane emissions from growing beef cattle zero-grazed on lowland and upland pasture
A.S. Richmond, A.R.G. Wylie, A.S. Laidlaw, F.O. Lively and N. O'Connell 27

Inhibition of in vitro rumen methanogenesis for different feed substrates by adding statins
M. O'Brien, P. O'Kiely and T. Boland 28

Impacts of bromochloromethane added to two feed substrates on in vitro rumen
methanogenesis 29
M. O'Brien, P. O'Kiely and T. Boland

Monday 11th March 2013

Session 2B: Animal Nutrition

Venue D.E. Williams II

**Chair Dr Alan Kelly, School of Agriculture and Food Science,
University College Dublin, Belfield, Dublin.**

10-minute Theatre & 5-Minute Discussion

14:00 The effects of silage digestibility on concentrate sparing in finishing beef cattle, lactating dairy cows, pregnant ewes and finishing lambs - **A Review** 127
T.W.J. Keady and J.P. Hanrahan

Performance of finishing cattle consuming diets based on grass silage plus fodder beet roots or rolled barley 30
P. O'Kiely and A.P. Moloney

The effect of offering concentrate feeds which differ in crude protein and Phosphorus concentration to grazing dairy cows in spring on milk yield and composition and animal N and P status 31
M. Reid, M. O'Donovan, J.S. Bailey, C. Elliott, C.J. Watson, J.P. Murphy, F. Coughlan and E. Lewis

Sensory characteristics of muscle from Angus x Holstein/Friesian and Belgian Blue x Holstein/Friesian heifers slaughtered at two ages 32
A. P. Moloney and R. I. Richardson

Milk production performance of autumn-calving Holstein Friesian cows managed under flat-rate or feed-to-yield concentrate feeding systems 33
J. Patton and A. Lawless

Effect of growth rate during the first indoor winter on performance to slaughter of late-maturing weaned suckler bred bulls. 34
D. Marren, M. McGee, A.P. Moloney, A. Kelly, and E.G. O'Riordan

3-Minute Presentations

Using sodium bentonite to increase silage intake 35
P. O'Kiely and R. Berthiaume

Carcass traits and visceral organ weights of beef bulls differing in phenotypic residual feed intake 36
C. Fitzsimons, D.A. Kenny and M. McGee

Effect of nutritional restriction in late pregnancy on performance of suckler cows and birth weight and passive immune status of their calves 37
M. McGee and B. Earley

Effects of milk feeding volume and frequency on weight gain in dairy heifer calves 38
C. Cummins, M. Conneely, J.P. Murphy, F. Coughlan, I. Lorenz and E. Kennedy

Effects of using Uniblock drystock energy as a supplement in late pregnancy for twin-bearing ewes 39
C.P. Ryan, K.M., McDermott, and T.M. Bolan.

Monday 11th March 2013

Session 3A: Production Systems & Economics

Venue D.E. Williams I

Chair Dr Paul Crosson, Teagasc, Animal & Grassland Research and Innovation Centre, Grange, Co. Meath.

10-minute Theatre & 5-Minute Discussion

16:00	Increasing the profitability of BETTER Sheep Farms <i>C.O. Lynch, K Connolly and M.G. Diskin</i>	40
	Characterisation of contrasting spring milk production systems <i>G. Ramsbottom, B. Horan and D. Berry</i>	41
	Benchmarking scale efficiency of Irish beef farms <i>E. Finneran and P. Crosson,</i>	42
	The effect of a seasonal versus a non-seasonal milk supply profile on the profitability of the farm and processing sectors <i>U. Geary and L. Shalloo</i>	43
	Evaluating expansion strategies for startup EU dairy farm businesses <i>R. McDonald, L. Shalloo, K. M. Pierce, and B. Horan</i>	44
	The ability of the commercial farmer to follow a target driven growth plan promoting calving at 24 months <i>F. M. Titterington, S. Morrison, F. O. Lively and A. Gordon</i>	45

3-Minute Presentations

	Effects of production system on early maturing dairy cross heifers <i>R. Prendiville, B. Swan and P. French</i>	46
	Incorporating compensatory growth into a whole-farm model of dairy calf-to-beef production systems <i>A. Ashfield, P. Crosson, M. Wallace and M. McGee</i>	47
	Developing a model of dairy cattle to predict milk production across lactations. <i>E. Ruelle, L. Delaby, M. Wallace and L. Shalloo</i>	48
	The effect of mastitis on the profitability of Irish dairy farms <i>U. Geary, B. O'Brien, F. McCoy, L. O'Grady and L. Shalloo</i>	49
	Validation of a parameterised mechanistic model in the south of Ireland <i>C. Hurtado-Uria, D. Hennessy, L. Delaby, D. O' Connor and L. Shalloo</i>	50
	Mathematical modelling of lamb growth rate <i>J.M. Coyne, P. Creighton and N. McHugh</i>	51

Monday 11th March 2013

Session 3B: Molecular Genetics

Venue D.E. Williams II

Chair Dr Ruth Hamill, Teagasc, Food Research Centre, Ashtown, Dublin 15.

10-minute Theatre & 5-Minute Discussion

16:00	Evidence of breed- and sex-specific differences in allele frequencies in the bovine IL gene promoter <i>B. Stojkovic , R. McLoughlin and K. G Meade</i>	52
	Effect of dietary restriction and compensatory growth on the hepatic expression of genes of the somatotrophic axis in Holstein Friesian bulls <i>K. Keogh, D.A. Kenny, A.K. Kelly and S.M. Waters</i>	53
	Genome-wide associations for carcass traits in Irish Holstein-Friesian cattle <i>A.G. Doran, , D.P. Berry and C.J. Creevey</i>	54
	Genome wide association study for calving performance in Irish cattle <i>D. Purfield,, D.G. Bradley , J.F. Kearney, and D.P. Berry,</i>	55
	Development of a custom genotyping chip for beef and dairy cattle in Ireland <i>M.P. Mullen, M.C. McClure, S.M. Waters, R. Weld, P. Flynn, C.J. Creevey, J.F. Kearney, A.R. Cromie and D.P. Berry.</i>	56

3-Minute Presentations

	Imputation of parental genotypes in dairy and beef cattle from progeny genotyped at different genotyping densities <i>M.P. Mullen, S. McParland, J.F. Kearney, M. Sargolzaei and D.P. Berry.</i>	57
	Associations between novel exonic missense mutations in key genes of the somatotrophic axis and milk yield and composition in dairy cattle <i>M.P. Mullen, D.P. Berry, C.J. Creevey, M.S. McCabe and S.M. Waters.</i>	58
	Effect of feed restriction and subsequent compensatory growth on the molecular control of ruminal epithelial function in cattle <i>E. O'Shea, S.M. Waters, A.K. Kelly, K. Keogh and D.A. Kenny,</i>	59
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Tuesday 12th March 2013

Session 4A: Animal Breeding

Venue D.E. Williams II

**Chair Dr Alan Fahey, School of Agriculture and Food Science,
University College Dublin, Belfield, Dublin.**

10-minute Theatre & 5-Minute Discussion

08:30	Development of a new management index for the Irish dairy cattle economic breeding index <i>D.P. Berry, J. Coyne, B. Coughlan, M. Burke, J. McCarthy, A.R. Cromie and S. McParland</i>	62
	Additive genetic, non-additive genetic and permanent environmental effects for female reproductive traits in seasonal calving herds <i>M.M. Kelleher, F. Buckley, R.D. Evans, D. Ryan, K. Pierce and D.P. Berry</i>	63
	Genetics of linear type traits in Irish dairy cattle <i>J.M. Coyne, D.P. Berry, A.R. Cromie, A.G. Fahey and S. McParland</i>	64
	The relationship between milk yield and predicted transmitting ability for maternal weaning weight across four cow breed types <i>D. Minogue, A. Cromie, M. McGee, W. Minchin and N. McHugh.</i>	65
	Genetic parameters for the Irish sheep population <i>N. McHugh, E. Wall and T. Pabiou</i>	66
	Genetic parameters of energy status predicted using the mid-infrared spectrum of milk <i>S. McParland, G. Banos, M.P. Coffey, B. McCarthy M. O'Donovan and D.P. Berry</i>	67
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	Genetic parameters for methane emissions in grazing dairy cows <i>M.M. Kelleher, E. Lewis, D.P. Berry, M.H. Deighton and F. Buckley</i>	68
	Improvements in the health sub-index for the Irish dairy cattle economic breeding index <i>D.P. Berry, J. Coyne, J.F. Kearney and S. McParland</i>	69
	Across breed, beef and dairy cattle genotype imputation to high-density genotypes <i>D.P. Berry, M.P. Mullen and A.R. Cromie.</i>	70
	A comparison of Jersey, Holstein-Friesian and Jersey Holstein-Friesian dairy cows in their ability to digest perennial ryegrass <i>M. Beecher, F. Buckley, T. Boland, C. Thackaberry, D. Enriquez-Hidalgo, M. O'Donovan and E. Lewis</i>	71
	Comparison of early- and late-maturing suckler bred bulls on contrasting production systems slaughtered at three carcass weights <i>D. Marren,, M. McGee, A.P. Moloney, A. Kelly and E.G. O'Riordan</i>	72
	Accuracy of Irish beef genetic evaluations <i>N. McHugh, R.D. Evans and A.R. Cromie</i>	73
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	Genetic parameters for calving traits in Irish cattle <i>D. Purfield, D.G. Bradley, R.D. Evans and D.P. Berry,</i>	75
	Relationships between measures of genetic merit and calving interval and survival rates on Irish winter milk dairy farms <i>G. Ramsbottom and J.Patton</i>	76

Tuesday 12th March 2013

Session 5A: Grassland and Biodiversity

Venue D.E. Williams I

Chair Dr Emer Kennedy, Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork

10-minute Theatre & 5-Minute Discussion

11:00	Ground coverage assessments of perennial ryegrass using digital imaging <i>T.M.H. Lynch, D. Grogan, O.M. Grant, P.J. Dix and S. Barth</i>	77
	Seasonal variation in organic matter digestibility and fibre content of the morphological components in perennial ryegrass cultivars <i>M. Beecher, E. Lewis, T. Boland, M. McEvoy, D. Hennessy and M. O'Donovan</i>	78
	Four-species swards improve productivity and reduce weed invasion in experimental grassland swards across international sites <i>J.A. Finn, L. Kirwan, C. Brophy, J. Connolly, M.T. Sebastià and A. Lüscher</i>	79
	Herbage production and sward clover content in grazed grass white clover plots: effect of N fertiliser application level <i>D. Enríquez-Hidalgo, T.J. Gilliland, M. O'Donovan, C. Elliott and D. Hennessy</i>	80
	The influence of white clover inclusion in perennial ryegrass swards on milk and herbage production in a high N fertiliser system <i>M.J. Egan, M.B. Lynch and D. Hennessy</i>	81
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	Sward structural differences between cultivars of perennial ryegrass (<i>Lolium perenne</i>) during the early summer period <i>D. Lawrence, M. O'Donovan, T.M. Boland, L. Delaby and M. McEvoy</i>	82
	The effect of white clover on the competitive hierarchies in perennial ryegrass mixtures <i>V. Griffith, T. J. Gilliland, D. Enriquez, M. O'Donovan, M. McEvoy and D Hennessy .</i>	83
	Evaluating ClampFilm TM for sealing ensiled grass <i>P. O'Kiely</i>	84
	Comparison of grass silage quality in 2011 and 2012 <i>R.S. Park, N.W. Grant and K.E. Whiteside</i>	85

Tuesday 12th March 2013

Session 5B: Animal Health-1

**Venue
Chair**

**D.E. Williams II
Michael Gottstein, Head of Sheep Programme, Teagasc,
Killarney, Co. Kerry.**

10-minute Theatre & 5-Minute Discussion

- 11:00 Lamb mortality in a prolific flock managed in an intensive grassland system: effect of ewe factors *T.W.J. Keady and J.P. Hanrahan* 86
- The use of a targeted selective treatment approach to parasite control in first season dairy-to-beef calves
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- The systemic cellular immune profile in pregnant and non-pregnant postpartum dairy cows
C. Foley & A. Chapwanya, C. O'Farrelly and K.G. Meade 88
- Effects of feeding genetically modified maize to sows during gestation and lactation on maternal immunity and fate of transgenic material
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- Physiological stress response of heifers divergently ranked for residual feed intake following a bovine corticotrophin releasing hormone challenge
A.K. Kelly, B. Earley, M.P. Mullen, A.G. Fahey, M. McGee and D.A. Kenny 90

3-Minute Presentations

- The association between udder hygiene score and the bacillus cereus count in raw bulk tank milk
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- Epigenetic regulation of the immune response in cattle
R. Doherty, C. O'Farrelly and K. G. Meade. 92
- Investigation of the persistence of triclabendazole residues in bovine milk following lactating-cow and dry-cow treatment
C. Power, M. Whelan, M. Danaher, Y. Bloemhoff, R. Sayers, B. O'Brien, A. Furey and K. Jordan 93
- Genotypic diversity and antimicrobial susceptibility status of Irish mastitis-associated *Staphylococcus aureus*
K.E Budd, F. McCoy, J. Mitchell and O.M. Keane 94
- Effect of 9-hour transport by road on physiology and performance of young bulls
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- Effects of feeding genetically modified maize to sows during gestation on the immune response of offspring at birth and fate of transgenic material
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- Animal and herd factors associated with somatic cell count of Irish Holstein-Friesians
S. McParland, J. McCarthy and B.O'Brien 97
- Overmilking causes deterioration in teat-end condition of dairy cows in late lactation
J.P. Edwards, B. O'Brien, N. Lopez-Villalobos and J.G. Jago 98

Tuesday 12th March 2013

Session 6A: Grassland & Animal Production

Venue D.E. Williams I

Chair Dr Eva Lewis, Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork

10-minute Theatre & 5-Minute Discussion

- 14:00 The effect of stocking rate and prolificacy level on the probability of finishing lambs from grass only based systems of production by a fixed date in a given year. 99
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- Short-term milk yield adaptation to changes in post-grazing sward height 100
E. Ganche, L. Delaby, M. O'Donovan, T.M. Boland and E. Kennedy
- Effect of perennial ryegrass (*Lolium perenne*) cultivar on milk production and dry matter intake of Holstein Friesian cows during the early summer period 101
D. Lawrence, M. O'Donovan, T.M. Boland, L. Delaby. and M. McEvoy
- The effect of stocking rate and calving date on the dry matter intake and feed efficiency of three pasture based systems of milk production. 102
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- Effects of imposing two post-grazing sward heights for varying lengths of time during early lactation on immediate and carryover dairy cow production 103
M. Crosse, M. O' Donovan, L. Delaby, T. Boland and E. Kennedy

3-Minute Presentations

- Effect of post-grazing sward height and cow type/breed during the main grazing season on milk production 104
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- Grazed herbage intake of beef heifer breed types in early pregnancy 105
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- A comparison of the effect of grass clover and grass only swards on dairy cow grazing behaviour on three occasions during the grazing season 106
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- Comparison of feeds offered during the winter on replacement dairy heifer bodyweight and weight gain 108
E. Kennedy, F. Coughlan, J.P. Murphy and S. Fitzgerald
- The effect of offering different supplementary feeds to grazing dairy cows in late lactation on milk yield and milk composition 109
M. Reid, M. O'Donovan, J.S. Bailey, C. Elliott, C. J. Watson, J.P. Murphy, F. Coughlan and E. Lewis

Tuesday 12th March 2013

Session 6B: Animal Health -2

Venue

D.E. Williams II

Chair

**Dr Martin Danaher, Teagasc, Food Research Centre,
Ashtown, Dublin 15.**

10-minute Theatre & 5-Minute Discussion

- 14:00 Assessing the risk posed by Salmonella in pig feed 110
A.M. Burns , P.G. Lawlor, G.E. Gardiner and G. Duffy
- The effect of a developer diet on locomotory ability, claw lesions, joint lesions, bone mineral density and weight in replacement gilts 111
A.J. Quinn, L.A. Boyle and L.E.Green,
- Rubber slat mats improve sow locomotion and reduce the risk of limb lesions. 112
J.A. Calderón Díaz, A.G. Fahey, A.L. Kilbride, L.E. Green and L.A. Boyle
- Genome-wide associations of somatic cell score for Holstein-Friesian cattle in Ireland 113
B. K. Meredith, N. Lawless, F. J. Kearney, A. G. Fahey, D. G. Bradley and D.J. Lynn

3-Minute Presentations

- Effect of pre-partum iodine supplementation of the dairy cow diet on the health status of their calves 114
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- Next generation sequencing reveals the expression of a unique miRNA profile in response to mastitis. 115
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- Detection of coccidiostat residues in egg and muscle using a multiplexing biochip screening immunoassay 116
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- Determination of cyromazine in muscle by using ultra high pressure liquid chromatography mass spectrometry 117
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- Detection of aminoglycoside residues in honey using a biochip screening array method 118
J. O'Mahony, L. Clarke, C. Griffin, A. Furey, R. O'Kennedy, and M. Danaher.
- Efficacy of post-milking teat disinfection products in reducing bacterial numbers on teats 119
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- A method for the detection of Salmonella species, Escherichia coli O:H and Listeria monocytogenes in compost and anaerobic digestate 120
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- The effects of energy metabolites on bovine macrophage activity in vitro 121
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- Divergent host response to gastrointestinal nematode infection in Scottish Blackface lambs 122
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