

## BIBLIOTECA

# BOLETÍN DE INFORMACIÓN BIBLIOGRÁFICA



**Sumarios de Publicaciones Periódicas n° 10**  
**2º quincena de MAYO 2008**

# AGRICULTURAL ECONOMICS

VOL. 38, NO. 2

CONTENTS

MARCH 2008

Contents/Abstracts published in Agricola database; Biosis Previews/Biological/Abstracts;  
CAB Abstracts/WAERSA; Current Awareness in Biological Sciences (CABS); EconLit; GeoAbstracts; Geobase;  
Science Citation Index

- Mitigation potential and costs for global agricultural greenhouse gas emissions  
Robert H. Beach, Benjamin J. DeAngelo, Steven Rose, Changsheng Li, William Salas,  
and Stephen J. DeGrosso ..... 109
- A general equilibrium analysis of conjunctive ground and surface water use with an application  
to Morocco  
Xinshen Diao, Ariel Dinar, Terry Roe, and Yacov Tsur ..... 117
- Costs and benefits of controlling quarantine diseases: a bio-economic modeling approach  
Annemarie Breukers, Monique Mourits, Wopke van der Werf, and Alfons Oude Lansink ..... 137
- Measuring impacts and adaptations to climate change: a structural Ricardian model of African  
livestock management  
S. Niggol Seo and Robert Mendelsohn ..... 151
- Potential impacts of Bt eggplant on economic surplus and farmers' health in India  
Vijesh V. Krishna and Matin Qaim ..... 167
- An economic approach to soil fertility management for wheat production in north-eastern Australia  
Robert J. Farquharson, Oscar J. Cacho, John D. Mullen, and Graeme D. Schwenke ..... 181
- Sheep as capital goods and farmers as portfolio managers: a bioeconomic model of Scandinavian  
sheep farming  
Anders Skonhoft ..... 193
- Does participation in the conservation reserve program impact the economic well-being  
of farm households?  
Hung-Hao Chang, Dayton M. Lambert, and Ashok K. Mishra ..... 201
- Estimating returns to soil conservation adoption in the northern Ethiopian highlands  
Menale Kassie, John Pender, Mahmud Yesuf, Gunnar Kohlin, Randy Bulffstone, and Elias Mulugeta .... 213
- A spatial high-resolution model of the dynamics of agricultural land use  
Luis Ambrosio Flores, Luis Iglesias Martínez, Carmen Marín Ferrer, Valero Pascual Gallego,  
and Arturo Serrano Bermejo ..... 233
- Book reviews**
- The World Food Economy  
P. Lynn Kennedy ..... 247
- Primary Industries Facing Global Markets: The Supply Chains and Markets for Norwegian Food  
Ian Sheldon ..... 247
- Agricultural Trade and Poverty: Can Trade Work for the Poor?  
Harry de Gorter ..... 249

8



Cover photo by David Eddy

## Tire Kickers' Dream

Plenty of new equipment was on display at the World Ag Expo.



16

# CROP

Commit to Quality  
Research Strategies to Cut Costs  
Organize for Market Strength  
Promote Environmental Stewardship

American/Western Fruit Grower's CROP initiative is designed to challenge the U.S. fruit industry to fulfill its potential in an increasingly competitive environment. Articles covering any component of CROP will be designated with the CROP logo.

## features

<b>Hall Of Fame Grower</b> .....	<b>12</b>
Dr. Steve Blizzard receives one of IFTA's most prestigious awards.	
<b>Growing With Cherries</b> .....	<b>13</b>
Researchers at the International Fruit Tree Association's annual conference offered tips on producing high-quality cherries.	
<b>Growing Kids Photo Contest</b> .....	<b>16</b>
Congratulations to all of these happy, smiling children.	
<b>Insect Control Update</b> .....	<b>24</b>
In the last of a four-part series on crop protection, we look at label changes and introductions of new insect control products.	
<b>Education, Vegas Style</b> .....	<b>28</b>
United Fresh will hold two big shows in Las Vegas.	
<b>Like Pavlov's Dogs</b> .....	<b>30</b>
A multi-agency research team has developed new management resources for dogwood borer.	
<b>The Best Of The Best</b> .....	<b>32</b>
We continue our look back at 20 years of success in apple growing.	
<b>1-MCP In The Field</b> .....	<b>34</b>
Registration for a preharvest version of the ripening inhibitor may be approaching.	
<b>USDA Packs Apple Snacks</b> .....	<b>37</b>
A pilot program will provide apple slices to schools.	
<b>Searching For The Best</b> .....	<b>38</b>
Now is your chance to nominate the 2008 Apple Grower of the Year.	

## departments

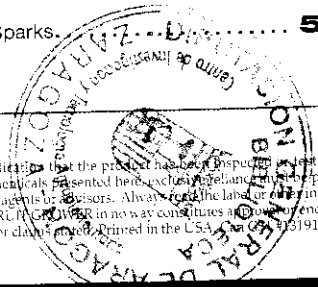
<b>Heard Down The Row</b> .....	<b>6</b>
<b>Variety Spotlight/Association Focus</b> .....	<b>40</b>
<b>Product Showcase</b> .....	<b>42</b>
<b>Ad Index</b> .....	<b>49</b>

## columnists

<b>Leading Off</b> by Laura Drotleff.....	<b>4</b>
<b>Tree Fruit: The Future From The Ground Up</b> by Jim McFerson.....	<b>50</b>
<b>Vine Lines: Advancements In Field Monitoring Systems</b> by Ron Brase.....	<b>52</b>
<b>Editorial: Costly Delays</b> by Brian Sparks.....	<b>54</b>

Reg. U.S. Pat. Off. Eastern Fruit Grower

Mention of a product name is not to be considered an endorsement nor an indication that the product has been inspected or tested by AMERICAN FRUIT GROWER. Notwithstanding information on agricultural chemicals presented here, exclude reliance in such replaced on directions and information supplied by the manufacturer or state agricultural agents or advisers. Always read the label or other instructions provided by the manufacturer. Acceptance of advertising in AMERICAN FRUIT GROWER in no way constitutes a product endorsement of products or services advertised nor agreement with any representation or claim made. Printed in the USA. Tel: 607/31912035. American Fruit Grower is a trademark of Munsie Media Worldwide



Volume 90

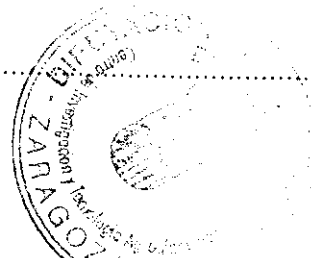
Number 2

May 2008

# American Journal of Agricultural Economics

## Articles

- Does Participation in the Food Stamp Program Increase the Prevalence of Obesity and Health Care Spending? ..... 287  
*Chad D. Meyerhoefer and Yuriy Pylypchuk*
- Tractors on eBay: Differences between Internet and In-Person Auctions ..... 306  
*Florian Diekmann, Brian E. Roe, and Marvin T. Batte*
- Avocado Pests and Avocado Trade ..... 321  
*Everett B. Peterson and David Orden*
- The Impact of Regulations on Agricultural Trade: Evidence from the SPS and TBT Agreements ..... 336  
*Anne-Célia Disdier, Lionel Fontagné, and Mondher Mimouni*
- Pre-Harvest Price Expectations for Corn: The Information Content of USDA Reports and New Crop Futures ..... 351  
*Andrew M. McKenzie*
- How Reliable Are Hog Futures as Forecasts? ..... 367  
*Colin A. Carter and Sandeep Mohapatra*
- Incentives to Reduce Crop Trait Durability ..... 379  
*Stefan Ambec, Corinne Langinier, and Stéphane Lemarié*
- What Causes Spatial Variations in Economic Development in the United States? ..... 392  
*JunJie Wu and Munisamy Gopinath*
- Risk Rationing and Wealth Effects in Credit Markets: Theory and Implications for Agricultural Development ..... 409  
*Stephen R. Boucher, Michael R. Carter, and Catherine Guirkinger*
- Crop Input Response Functions with Stochastic Plateaus ..... 424  
*Gelson Tembo, B. Wade Brorsen, Francis M. Epplin, and Emillio Tostão*
- A Cost Approach to Economic Analysis Under State-Contingent Production Uncertainty ..... 435  
*Jean-Paul Chavas*
- Welfare Effects of Technological Convergence in Processed Food Industries ..... 447  
*Jun Ruan, Munisamy Gopinath, and Steven Buccola*
- Choosing Brands: Fresh Produce versus Other Products ..... 463  
*Yanhong H. Jin, David Zilberman, and Amir Heiman*



Decomposing Local: A Conjoint Analysis of Locally Produced Foods .....	476
<i>Kim Darby, Marvin T. Batte, Stan Ernst, and Brian Roe</i>	
An Incentive Compatible Conjoint Ranking Mechanism .....	487
<i>Jayson L. Lusk, Deacue Fields, and Walt Prevatt</i>	
Implementable Ramsey-Boiteux Pricing in Agricultural and Environmental Policy .....	499
<i>Jean-Marc Bourgeon and Robert G. Chambers</i>	
A System Comparison Approach to Distinguish Two Nonseparable and Nonnested Agricultural Household Models .....	509
<i>Tadashi Sonoda</i>	
Spatial Dynamics of Water and Nitrogen Management in Irrigated Agriculture .....	524
<i>Keith C. Knapp and Kurt A. Schwabe</i>	
The Problem of Free Riding in Voluntary Generic Advertising: Parallelism and Possible Solutions from the Lab .....	540
<i>Kent D. Messer, Harry M. Kaiser, and William D. Schulze</i>	
Differentiation and Synergies in Rural Tourism: Estimation and Simulation of the Israeli Market .....	553
<i>Anat Tchetchik, Aliza Fleischer, and Israel Finkelshtain</i>	

### Books Reviewed

Stiglitz, J.E. and Charlton, A. <i>Fair Trade for All</i> .....	571
<i>David Blandford</i>	
Moran, Emilio F. and Elinor Ostrom. <i>Seeing the Forest and the Trees: Human- Environment Interactions in Forest Ecosystems</i> .....	573
<i>Susan M. Capalbo</i>	
Vernon W. Ruttan. <i>Social Science Knowledge and Economic Development: An Institutional Design Perspective</i> .....	574
<i>Rohini Somanathan</i>	
Rhodes, V. James, Jan L. Dauve, and Joseph L. Parcell. <i>The Agricultural Marketing System – Sixth Edition.</i> .....	576
<i>James G. Beierlein</i>	

# ANIMAL FEED SCIENCE AND TECHNOLOGY

VOL. 140 NOS. 3-4

CONTENTS

15 JANUARY 2008

(Abstracted/Indexed in: *Biological Abstracts*, *Current Contents Agriculture, Biology and Environmental Sciences*, *Herbage Abstracts Index Veterinarius*, *Nutrition Abstracts*, *Veterinary Bulletin*. Also covered in the abstract and citation database SCOPUS®. Full text available on ScienceDirect®)

## Obituary

Professor John Raymond Brethour (1934-2007)

P. Udén, P.H. Robinson and J. Riley ..... 219

## Ruminants

Performance and rumen fermentation of dairy calves supplemented with *Saccharomyces cerevisiae*<sup>1077</sup> or *Saccharomyces boulardii*<sup>1079</sup>

J.M. Pinos-Rodríguez, P.H. Robinson, M.E. Ortega, S.L. Berry, G. Mendoza and R. Bárcena ... 223

Assessment of blended sorbitol and mannitol as a glucogenic precursor for periparturient dairy cows

J.W. McFadden, S.S. Block and J.K. Drackley ..... 233

Effects of feeding supplemental palmitic acid (C16:0) on performance and milk fatty acid profile of lactating dairy cows under summer heat

J.L. Warntjes, P.H. Robinson, E. Galo, E.J. DePeters and D. Howes ..... 241

Impacts of feeding several components of the seaweed *Ascophyllum nodosum* on transported lambs

G.S. Archer, T.H. Friend, D. Caldwell, K. Ameiss, P.D. Krawczel, C. Iacono, H. Keen and T. Martin ..... 258

Sensitivity of two metabolic models of dairy cattle digestion and metabolism to changes in nutrient content of diets

H.G. Bateman II, M.D. Hanigan and R.A. Kohn ..... 272

Effect of disodium fumarate on ruminal metabolism and rumen bacterial communities as revealed by denaturing gradient gel electrophoresis analysis of 16S ribosomal DNA

S.Y. Mao, G. Zhang and W.Y. Zhu ..... 293

Effects of dietary forage particle size and concentrate level on fermentation profile, *in vitro* degradation characteristics and concentration of liquid- or solid-associated bacterial mass in the rumen of dairy cows

Q. Zebeli, M. Tafaj, I. Weber, H. Steingass and W. Drochner ..... 307

## Non-ruminants

Effect of dietary bovine lactoferrin on performance and antioxidant status of piglets

Y.Z. Wang, C.L. Xu, Z.H. An, J.X. Liu and J. Feng ..... 326

(Contents continued on page I)

A complete Guide for Authors and other journal information  
can be found at [www.elsevier.com/locate/anifec](http://www.elsevier.com/locate/anifec)



0377-8401(20080115)140:3/4;1-W

05088

*Contents continued from outside back cover*

Effect of the combined supplementation of diets with increasing levels of fish and linseed oils on yolk fat composition and sensorial quality of eggs in laying hens P. García-Rebollar, P. Cachaldora, C. Alvarez, C. De Blas and J. Méndez	337
The interaction between lactose level and enzyme supplementation and form of barley processing on performance, digestibility and faecal volatile fatty acid concentration of weanling pigs fed barley-based diets M.B. Lynch, J.J. Callan and J.V. O'Doherty	349
Effect of dietary betaine supplementation on lipogenic enzyme activities and fatty acid synthase mRNA expression in finishing pigs Q.C. Huang, Z.R. Xu, X.Y. Han and W.F. Li	365
Effects of dietary supplementation of keratinase on growth performance, nitrogen retention and intestinal morphology of broiler chickens fed diets with soybean and cottonseed meals H. Wang, Y. Guo and J.C.H. Shih	376
Evaluating standardized ileal digestibility of amino acids in growing pigs Y.-L. Yin, T.-J. Li, R.-L. Huang, Z.-Q. Liu, X.F. Kong, W.-Y. Chu, B.-E. Tan, D. -Deng, P. Kang and F.-G. Yin	385
<b>General Topics</b>	
Chemical composition and <i>in vitro</i> fermentation of tannin-rich tree fruits V. Mlambo, F.L. Mould, J.L.N. Sikosana, T. Smith, E. Owen and I. Mueller-Harvey	402
A review of the use of isotopic and nuclear techniques in animal production H.P.S. Makkar	418
The influence of addition of gallic acid, tannic acid, or quebracho tannins to alfalfa hay on <i>in vitro</i> rumen fermentation and microbial protein synthesis G. Getachew, W. Pittroff, D.H. Putnam, A. Dandekar, S. Goyal and E.J. DePeters	444
<i>In vitro</i> evaluation of feed-grade enzyme activity at pH levels simulating various parts of the avian digestive tract T. Ao, A.H. Cantor, A.J. Pescatore and J.L. Pierce	462

# ANIMAL FEED SCIENCE AND TECHNOLOGY

VOL. 141 NOS. 1-2

CONTENTS

1 MARCH 2008

(Abstracted/Indexed in: *Biological Abstracts, Current Contents Agriculture, Biology and Environmental Sciences, Herbage Abstracts Index Veterinarius, Nutrition Abstracts, Veterinary Bulletin. Also covered in the abstract and citation database SCOPUS®. Full text available on ScienceDirect®*)

## Ruminants

- Effects of chemical treatments of rice straw on rumen fermentation characteristics, fibrolytic enzyme activities and populations of liquid- and solid-associated ruminal microbes *in vitro*  
X.L. Chen, J.K. Wang, Y.M. Wu and J.X. Liu ..... 1
- Comparison of techniques and grinding size to estimate digestibility of forage based ruminant diets  
D. Damiran, T. DelCurto, D.W. Bohnert and S.L. Findholt ..... 15
- Is goats' preference of forage trees affected by their tannin or fiber content when offered in cafeteria experiments?  
M.A. Alonso-Díaz, J.F.J. Torres-Acosta, C.A. Sandoval-Castro, H. Hoste, A.J. Aguilar-Caballero and C.M. Capetillo-Leal ..... 36
- The effect of wilting and soaking *Eupatorium adenophorum* on its digestibility *in vitro* and voluntary intake by goats  
C. Rymer ..... 49
- Willow (*Salix* spp.) fodder blocks for growth and sustainable management of internal parasites in grazing lambs  
C.M. Diaz Lira, T.N. Barry, W.E. Pomroy, E.L. McWilliam and N. Lopez-Villalobos ..... 61

## Non-ruminants

- Evaluation of *Lactobacillus reuteri* Pg4 strain expressing heterologous  $\beta$ -glucanase as a probiotic in poultry diets based on barley  
B. Yu, J.R. Liu, F.S. Hsiao and P.W.S. Chiou ..... 82
- Live performance and environmental impact of broiler chickens fed diets varying in amino acids and phytase  
W.A. Dozier III, M.T. Kidd, A. Corzo, P.R. Owens and S.L. Branton ..... 92
- Effect of type and level of basal fat and level of fish oil supplementation on yolk fat composition and n-3 fatty acids deposition efficiency in laying hens  
P. Cachaldora, P. García-Rebollar, C. Alvarez, J.C. De Blas and J. Méndez ..... 104
- Evaluation of the ability of barley genotypes containing different amounts of  $\beta$ -glucan to alter growth and disease resistance of rainbow trout *Oncorhynchus mykiss*  
W.M. Sealey, F.T. Barrows, A. Hang, K.A. Johansen, K. Overturf, S.E. LaPatra and R.W. Hardy ... 115
- Preparation of silage from Spanish mackerel (*Scomberomorus maculatus*) and its evaluation in broiler diets  
H. Santana-Delgado, E. Avila and A. Sotelo ..... 129

(Contents continued on page I)

A complete Guide for Authors and other journal information  
can be found at [www.elsevier.com/locate/anifee](http://www.elsevier.com/locate/anifee)



0377-8401 (20080301) 141:1/2;1-3

05088



<i>Contents continued from outside back cover</i>	
Evaluation of dietary L-carnitine or garlic powder on growth performance, dry matter and nitrogen digestibilities, blood profiles and meat quality in finishing pigs Y.J. Chen, I.H. Kim, J.H. Cho, J.S. Yoo, Q. Wang, Y. Wang and Y. Huang	141
<b>General Topics</b>	
A new approach for <i>in vitro</i> bioassay to measure tannin biological effects based on a gas production technique I.C.S. Bueno, D.M.S.S. Vitti, H. Louvandini and A.L. Abdalla	153
Kinetics of enzymatic digestion of feeds as estimated by a stepwise <i>in vitro</i> method A. Wilfart, Y. Jaguelin-Peyraud, H. Simmins, J. Noblet, J. van Milgen and L. Montagne	171
Effects of microwave irradiation on ruminal dry matter, protein and starch degradation characteristics of barley grain A.A. Sadeghi and P. Shawrang	184
<b>Book Review</b>	
Empfehlungen zur Energie-und Nährstoffversorgung von Schweinen - New German recommendations for the energy and nutrient supply of pigs S. Dänicke	195

# ANIMAL FEED SCIENCE AND TECHNOLOGY

VOL. 141 NOS. 3-4

CONTENTS

1 APRIL 2008

(Abstracted/Indexed in: *Biological Abstracts, Current Contents Agriculture, Biology and Environmental Sciences, Herbage Abstracts Index Veterinarius, Nutrition Abstracts, Veterinary Bulletin. Also covered in the abstract and citation database SCOPUS®. Full text available on ScienceDirect®*)

## Ruminants

- Effects of hay inclusion on intake, *in vivo* nutrient utilization and ruminal fermentation of goats fed spineless cactus (*Opuntia ficus-indica* Mill) based diets  
E.L. Vieira, Â.M.V. Batista, A. Guim, F.F. Carvalho, A.C. Nascimento, R.F.S. Araújo and A.F. Mustafa ..... 199
- Chemical composition, *in situ* ruminal degradability and post-ruminal disappearance of dry matter and crude protein from the halophytic plants *Kochia scoparia*, *Atriplex dimorphostegia*, *Suaeda arcuata* and *Gamanthus gamacarpus*  
A. Riasi, M. Danesh Mesgaran, M.D. Stern and M.J. Ruiz Moreno ..... 209
- Effect of fish oil and sunflower oil supplementation on milk conjugated linoleic acid content for grazing dairy cows  
A.A. AbuGhazaleh ..... 220
- Effect of monensin on mineral balance in growing ruminants reared under different environmental temperatures  
M.S.V. Salles, M.A. Zanetti and F.A. Salles ..... 233
- Effects of *Brosimum alicastrum* and *Lysiloma latisiliquum* mixtures on voluntary intake, nutrient digestibility and nitrogen balance in sheep fed tropical pastures  
A. Castro-González, J.A. Alayón-Gamboa, A. Ayala-Burgos and L. Ramírez-Avilés ..... 246

## Non-ruminants

- Effect of *Ascophyllum nodosum* extract on growth performance, digestibility, carcass characteristics and selected intestinal microflora populations of grower-finisher pigs  
G.E. Gardiner, A.J. Campbell, J.V. O'Doherty, E. Pierce, P.B. Lynch, F.C. Leonard, C. Stanton, R.P. Ross and P.G. Lawlor ..... 259
- The effect of vitamin E supplementation on reduction of lymphocyte DNA damage induced by T-2 toxin and deoxynivalenol in weaned pigs  
T. Frankič, J. Salobir and V. Rezar ..... 274
- Impact of wheat grinding and pelleting in a wheat-rapeseed meal diet on amino acid ileal digestibility and endogenous losses in pigs  
L. Lahaye, P. Ganier, J.N. Thibault, Y. Riou and B. Sève ..... 287

## General Topics

- Effects of exogenous fibrolytic enzymes on *in vitro* ruminal fermentation of substrates with different forage:concentrate ratios  
L.A. Giraldo, M.L. Tejido, M.J. Ranilla and M.D. Carro ..... 306

(Contents continued on page 1)

A complete Guide for Authors and other journal information  
can be found at [www.elsevier.com/locate/anifec](http://www.elsevier.com/locate/anifec)

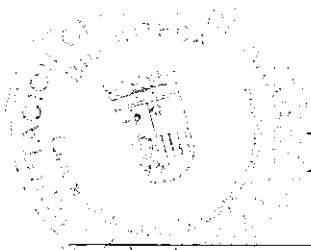


0377-8401(20080401)141:3/4;1-Z

05088

*Contents continued from outside back cover*

Effect of enzyme extracts isolated from white-rot fungi on chemical composition and <i>in vitro</i> digestibility of wheat straw M.A.M. Rodrigues, P. Pinto, R.M.F. Bezerra, A.A. Dias, C.V.M. Guedes, V.M.G. Cardoso, J.W. Cone, L.M.M. Ferreira, J. Colaço and C.A. Sequeira .....	326
<i>In vitro</i> biohydrogenation of four dietary fats M. Carriquiry, W.J. Weber, L.H. Baumgard and B.A. Crooker .....	339
Microbial colonization and degradation of forage samples incubated <i>in vitro</i> at different initial pH G.V. Kozloski, L.D. Lima, R.L. Cadorn Jr., L.M. Bonnacarrère Sanchez, C.C.D. Senger, G. Fiorentini and C.J. Härter .....	356
<b>Brief Communications</b>	
Ensiling and subsequent ruminal degradation characteristics of barley tea grounds treated with contrasting additives C. Xu, Y. Cai, J. Zhang, M. Fukasawa and N. Moriya .....	368
Nutritional value of fermented olive wastes in growing lamb rations V. Christodoulou, V.A. Bampidis, C.J. Israilides, P.H. Robinson, A. Giouzelyiannis and A. Vlyssides .....	375
Digestibility and metabolisable energy values of dried tomato pomace for laying and meat type cockerels B. Mansoori, M. Modirsanei, M. Radfar, M.M. Kiaei, M. Farkhoy and J. Honarзад .....	384
<b>Book Review</b>	
Gaining the edge in pork and poultry production – Enhancing efficiency, quality and safety G. Flachowsky .....	391



# ANIMAL REPRODUCTION SCIENCE

/ 8 MAYO 2008

VOL. 103, ISSUES 3-4

CONTENTS

30 JANUARY 2008

(Abstracts/contents list published in *Animal Breeding Abstracts*, *Bibliography of Reproduction*, *Biological Abstracts*, *Current Awareness in Biological Sciences*, *Current Contents-Agriculture, Biology and Environmental Sciences*, *Index Medicus/MEDLINE Elsevier BIOBASE, Pubmed*). Also covered in the abstract and citation database SCOPUS®. Full text available on ScienceDirect®)

Assessment of <i>in vitro</i> sperm characteristics in relation to fertility in dairy bulls L. Gillan, T. Kroetsch, W.M. Chis Maxwell and G. Evans . . . . .	201
Progesterone receptors, oestrogen receptor $\alpha$ and glucocorticoid receptors in the bovine intercaruncular uterine wall around parturition M. Schäubli, N. Ritter, M. Hässig, H. Zerbe, U. Bleul and A. Boos . . . . .	215
The effect of glucosamine concentration on the development and sex ratio of bovine embryos K. Kimura, H. Iwata and J.G. Thompson . . . . .	228
Improved cryopreservation of bovine preimplantation embryos cultured in chemically defined medium K.T. Lim, G. Jang, K.H. Ko, W.W. Lee, H.J. Park, J.J. Kim, S.K. Kang and B.C. Lee . . . . .	239
A comparative study of parthenogenic activation and <i>in vitro</i> fertilization of bubaline oocytes V. Mishra, A.K. Misra and R. Sharma . . . . .	249
Production of superoxide anion and hydrogen peroxide by capacitating buffalo ( <i>Bubalus bubalis</i> ) spermatozoa S.C. Roy and S.K. Atreja . . . . .	260
Ram effect: Adult rams induce a greater reproductive response in anestrus ewes than yearling rams R. Ungerfeld, M.A. Ramos and S.P. González-Pensado . . . . .	271
Induced seasonal reproductive performance in two breeds of sheep G. de Nicolo, S.T. Morris, P.R. Kenyon, P.C.H. Morel and T.J. Parkinson . . . . .	278
Total RNA and protein content, Cyclin B1 expression and developmental competence of prepubertal goat oocytes B. Anguita, M.-T. Paramio, A.R. Jiménez-Macedo, R. Morató, T. Mogas and D. Izquierdo . . . . .	290
Effects of fusion/activation methods on development of embryos produced by nuclear transfer of porcine fetal fibroblast P.Q. Cong, E.S. Kim, E.S. Song, Y.J. Yi and C.S. Park . . . . .	304

(Contents continued on page 1)

Available online at



ScienceDirect

www.sciencedirect.com

A complete Guide for Authors for Animal Reproduction Science, and other journal information can be found at [elsevier.com/locate/anirep](http://elsevier.com/locate/anirep)



0378-4320(20080130)103:3;1-A

05089

(Contents continued from back cover)

Differential gene expression of bone morphogenetic protein 15 and growth differentiation factor 9 during <i>in vitro</i> maturation of porcine oocytes and early embryos H.-K. Li, T.-Y. Kuo, H.-S. Yang, L.-R. Chen, S.S.-L. Li and H.-W. Huang . . . . .	312
Field fertility of frozen-thawed boar sperm at low doses using non-surgical, deep uterine insemination R. Bathgate, B.M. Eriksson, P.C. Thomson, W.M.C. Maxwell and G. Evans . . . . .	323
Germinal vesicle chromatin configuration and meiotic competence is related to the oocyte source in canine H.S. Lee, X.J. Yin, Y.X. Jin, N.H. Kim, S.G. Cho, I.H. Bae and I.K. Kong . . . . .	336
<b>Short communications</b>	
Complex vertebral malformation in Holstein cows in Japan and its inheritance to crossbred F1 generation M.E. Ghanem, M. Akita, T. Suzuki, A. Kasuga and M. Nishibori . . . . .	348
Cervical leiomyoma in a dairy cow during pregnancy S. Sendag, Y. Cetin, M. Alan, F. Ilhan, F. Eski and A. Wehrend . . . . .	355
Direct kisspeptin-10 stimulation on luteinizing hormone secretion from bovine and porcine anterior pituitary cells S. Suzuki, H. Kadokawa and T. Hashizume . . . . .	360
Progesterone and behavioral features when estrous is induced in Alpine goats J.F. Fonseca, C.A.A. Torres, A.D.F. Santos, V.V. Maffili, L.S. Amorim and E.A. Moraes . . . . .	366
Morphometric classification of Spanish thoroughbred stallion sperm heads M. Hidalgo, I. Rodriguez, J. Dorado and C. Soler . . . . .	374
Feeding level does not affect progesterone levels in intermittently suckled sows with lactational ovulation R. Gerritsen, N.M. Soede, B.F.A. Laurensen, P. Langendijk, S.J. Dieleman, W. Hazeleger and B. Kemp . . . . .	379
Sex ratio in rabbits following modified artificial insemination M.D. Vega, A.I. Peña, J. Gullón, C. Prieto, M. Barrio, J.J. Becerra, P.G. Herradón and L.A. Quintela . . . . .	385
Reversal of motility loss in bongo antelope ( <i>Tragelaphus eurycerus isaaci</i> ) spermatozoa contaminated with hypotonic urine during electroejaculation G. Wirtu, C.E. Pope, R.A. MacLean, R.A. Godke, D.L. Paccamonti and B.L. Dresser . . . . .	392

# ANIMAL REPRODUCTION SCIENCE

/ 8 MAYO 2008

VOL. 104, ISSUE 1

CONTENTS

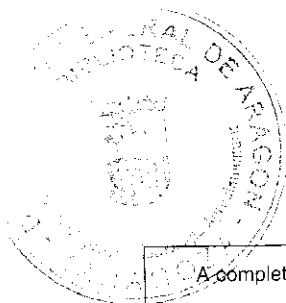
1 FEBRUARY 2008

(Abstracts/contents list published in *Animal Breeding Abstracts*, *Bibliography of Reproduction*, *Biological Abstracts*, *Current Awareness in Biological Sciences*, *Current Contents-Agriculture, Biology and Environmental Sciences*, *Index Medicus/MEDLINE Elsevier BIOBASE*, *Pubmed*). Also covered in the abstract and citation database *SCOPUS*<sup>®</sup>. Full text available on *ScienceDirect*<sup>®</sup>)

Sire effect on the pregnancy outcome in beef cows synchronized with progesterone based Ovsynch and CO-Synch protocols R. Kasimanickam, J.B. Hall, J.F. Curriu and W.D. Whittier . . . . .	1
Computer automated motion analysis of crossbred bull spermatozoa and its relationship with <i>in vitro</i> fertility in zona-free hamster oocytes P. Kathiravan, J. Kalatharan, M. John Edwin and C. Veerapandian . . . . .	9
Luteotrophic effect, growth and survival of whole versus half embryos and, their relationship with plasma progesterone concentrations of recipient dairy heifers J. Chagas e Silva, P. Diniz and L. Lopes da Costa . . . . .	18
Effect of individual heifer oocyte donors on cloned embryo development <i>in vitro</i> X.-Y. Yang, J.-G. Zhao, H. Li, H.-F. Liu, Y. Huang, S.-Z. Huang, F. Zeng and Y.-T. Zeng. . . . .	28
The potential fertility estimation capacity of the hypoosmotic swelling test, the thermal stress test and a modified cervical mucus penetration test in the bovine S. Bacinoglu, M. Taş, Ü. Cirit, Ö.B. Özdaş and K. Ak . . . . .	38
Systemic and intraovarian effects of corpus luteum on follicular dynamics during estrous cycle in hair breed sheep I. Contreras-Solis, T. Diaz, G. Lopez, A. Caigua, A. Lopez-Sebastian and A. Gonzalez-Bulnes . . . . .	47
Geldanamycin augments nitric oxide production and promotes capacitation in boar spermatozoa M.-L. Hou, S.-Y. Huang, Y.-K. Lai and W.-C. Lee . . . . .	56
Porcine sperm zona binding ability as an indicator of fertility E.D. Collins, W.L. Flowers, R.D. Shanks and D.J. Miller . . . . .	69
Effects of spermatozoa during <i>in vitro</i> meiosis progression in the porcine germinal vesicle oocytes B.K. Kim, M.A. Javed, S.R. Kang, D.-E. Kim, C.-H. Han, M.K. Huh and T. Kamal . . . . .	83
Construction and characterization of phage display library: Recognition of mouse serologically detected male (SDM) antigen N. Wang, D. Xu, A. Yuan, Z. Deng, L. Xue and S. Cui . . . . .	93
Guide for Authors . . . . .	111

Available online at

 **ScienceDirect**  
www.sciencedirect.com



A complete Guide for Authors for *Animal Reproduction Science*, and other journal information can be found at [elsevier.com/locate/anirep](http://elsevier.com/locate/anirep)



0378-4320(20080201)104:1;1-J

05089

# ANIMAL REPRODUCTION / 8 MAYO 2008 SCIENCE

VOL. 104, ISSUES 2-4

CONTENTS

3 MARCH 2008

(Abstracts/contents list published in *Animal Breeding Abstracts*, *Bibliography of Reproduction*, *Biological Abstracts*, *Current Awareness in Biological Sciences*, *Current Contents-Agriculture, Biology and Environmental Sciences*, *Index Medicus/MEDLINE Elsevier BIOBASE*, *Pubmed*). Also covered in the abstract and citation database *SCOPUS*<sup>®</sup>. Full text available on *ScienceDirect*<sup>®</sup>)

- Effects that bovine sperm cryopreservation using two different extenders has on sperm membranes and chromatin  
E.C.C. Celeghini, R.P. de Arruda, A.F.C. de Andrade, J. Nascimento, C.F. Raphael and P.H.M. Rodrigues. . . . . 119
- Oxygen tension during *in vitro* culture of bovine embryos: Effect in production and expression of genes related to oxidative stress  
G.A. Corrêa, R. Rumpf, T.C.D. Mundim, M.M. Franco and M.A.N. Dode . . . . . 132
- Factors affecting chromatin stability of bovine spermatozoa  
T.A.A. Khalifa, C.A. Rekkas, A.G. Lymberopoulos, A. Sioga, I. Dimitriadis and T. Papanikolaou . . . . . 143
- Progesterone and the distribution of pituitary gonadotropin isoforms in cattle  
G. Perera-Marín, C.G. Gutiérrez, C. Murcia, H. León and E. González-Padilla . . . . 164
- Effects of treatment with GnRH from 4 to 8 weeks of age on the attainment of sexual maturity in bull calves  
S. Madgwick, E.T. Bagu, R. Duggavathi, P.M. Bartlewski, D.M.W. Barrett, S. Huchkowsky, S.J. Cook, A.P. Beard and N.C. Rawlings. . . . . 177
- Evaluation of a contract breeding management program in Ohio dairy herds: Test day summary and economic measures  
C. Meadows, P.J. Rajala-Schultz, G.S. Frazer, R.W. Meiring and K.H. Hoblet . . . . . 189
- Intraglandular injection of antibiotics for the treatment of vesicular adenitis in bulls  
M.F. Martínez, A.A. Arteaga and A.D. Barth. . . . . 201
- A comparison of the protective action of added egg yolks from five avian species to the cryopreservation of bull sperm  
L. Su, X. Li, J. Quan, S. Yang, Y. Li, X. He and X. Tang . . . . . 212
- Seminal plasma non-heparin binding proteins (NHBP) reduce the cryoinjury to buffalo cauda epididymal spermatozoa induced by heparin binding proteins (HBP)  
A. Kumar, L.P. Singh, H.M. Harshan and A.C. Majumdar. . . . . 220

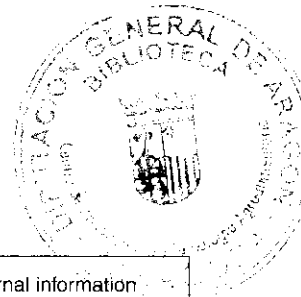
(Contents continued on page 456)

Available online at



ScienceDirect

www.sciencedirect.com



A complete Guide for Authors for Animal Reproduction Science, and other journal information can be found at [elsevier.com/locate/anirep](http://elsevier.com/locate/anirep)



0378-4320(20080303)104:2/4;1-R

05089

	457
Efficiency of short-term storage of equine semen in a simple-design cooling system D.B. Nupes, J.R. Zorzatto, E.V. Costa e Silva and C.E.S.N. Zúccari .....	434
Early pregnancy loss in sows after low dose, deep uterine artificial insemination with sex-sorted, frozen-thawed sperm R. Bathgate, R. Grossfeld, D. Susetio, M. Ruckholdt, K. Heasman, D. Rath, G. Evans and W.M.C. Maxwell. ....	440
Feeding with supplemental squalene enhances the productive performance in boars W. Zhang, X. Zhang, D. Bi, X. Wang, Y. Cai, H. Dai and S. Chen.....	445
Simplified hypoosmotic swelling testing (HOST) of fresh and frozen-thawed canine spermatozoa C.R.F. Pinto and D.M. Kozink .....	450



8 MAY 2008

# ANIMAL REPRODUCTION SCIENCE

VOL. 105, ISSUES 1–2

CONTENTS

APRIL 2008

*(Abstracts/contents list published in Animal Breeding Abstracts, Bibliography of Reproduction, Biological Abstracts, Current Awareness in Biological Sciences, Current Contents-Agriculture, Biology and Environmental Sciences, Index Medicus/MEDLINE Elsevier BIOBASE, Pubmed). Also covered in the abstract and citation database SCOPUS®. Full text available on ScienceDirect®)*

Special Issue: Understanding and Exploiting Spermatozoa – A  
Festschrift for Rupert P. Amann

For contents see preliminary pages

Available online at

**ScienceDirect**

[www.sciencedirect.com](http://www.sciencedirect.com)

A complete Guide for Authors for Animal Reproduction Science, and other journal information  
can be found at [elsevier.com/locate/anirep](http://elsevier.com/locate/anirep)



05089

ANIMAL REPRODUCTION SCIENCE

SPECIAL ISSUE

**UNDERSTANDING AND EXPLOITING  
SPERMATOZOA – A FESTSCHRIFT  
FOR RUPERT P. AMANN**

Guest Editors

With the editorial assistance of Sallie Varner

**George E. Seidel, Jr.**

ARBL, Foothills Campus  
Colorado State University  
Fort Collins, CO 80523-1683, USA

**James K. Graham**

ARBL, Physiology Building  
Colorado State University  
Fort Collins, CO 80523-1680, USA

**D.N. Rao Veeramachaneni**

ARBL, Foothills Campus  
Colorado State University  
Fort Collins, CO 8053-1683, USA



ELSEVIER

Animal Reproduction Science 105 (2008) vi

**ANIMAL  
REPRODUCTION  
SCIENCE**

www.elsevier.com/locate/anireprosci

**Special Issue: Understanding and Exploiting Spermatozoa – A Festschrift for Rupert P. Amann**

Foreword	
J.K. Graham, G.E. Seidel Jr. and D.N.R. Veeramachaneni	1
Dr. Rupert P. Amann	
G.E. Seidel Jr.	2
Comparative reliability and sensitivity of different methods for assessing treatment effects on sperm production	
W.E. Berndtson	5
Role of Sertoli cell number and function on regulation of spermatogenesis	
L. Johnson, D.L. Thompson Jr. and D.D. Varner	23
Maturing the sperm: Unique mechanisms for modifying integral proteins in the sperm plasma membrane	
S.R. Marengo	52
Variation in male sexual behavior	
L.S. Katz	64
Binding patterns of bovine seminal plasma proteins A1/A2, 30 kDa and osteopontin on ejaculated sperm before and after incubation with isthmic and ampullary oviductal fluid	
C.E.A. Souza, A.A. Moura, E. Monaco and G.J. Killian	72
Saga of a sperm fertility biomarker	
G.R. Klinefelter	90
<i>In vitro</i> evaluation of sperm quality	
E. Mocer and J.K. Graham	104
Commercial semen freezing: Individual male variation in cryosurvival and the response of stallion sperm to customized freezing protocols	
P.R. Loomis and J.K. Graham	119
Pregnancy rates in cattle with cryopreserved sexed sperm: Effects of sperm numbers per inseminate and site of sperm deposition	
G.E. Seidel Jr. and J.L. Schenk	129
Male contraceptive technology for nonhuman male mammals	
R.A. Bowen	139
Impact of environmental pollutants on the male: Effects on germ cell differentiation	
D.N.R. Veeramachaneni	144
Commercialization of basic research from within the university and return of value to the public	
R.H. Hammerstedt and E.L. Blach	158
Will there be another generation of reproductive scientists?	
P.L. Senger	179

# APPLIED ANIMAL BEHAVIOUR SCIENCE

/ 8 MAYO 2008

VOLUME 109 ISSUES 2-4

Contents

FEBRUARY 2008

(Abstracted/Indexed in: *Agricola, Agricultural Engineering Abstracts, Animal Behaviour Abstracts, Biological Abstracts, Current Awareness in Biological Sciences, Current Contents/Agriculture, Biology & Environmental Sciences, Ecology Abstracts, Index Veterinarius, PsycINFO Psychological Abstracts, Veterinary Bulletin. Also covered in the abstract and citation database Scopus®. Full text available on ScienceDirect®.*)

## Review Article

- A preliminary model of human-animal relationships in the zoo  
Geoff Hosey ..... 105

## Original Papers

- Cattle generalise visual cues from the pen to the field to select initial feeding patches  
Wilma J. Renken, Larry D. Howery, George B. Ruyle and R. Mark Enns ..... 128
- Effect of solar radiation on dairy cattle behaviour, use of shade and body temperature in a pasture-based system  
Cassandra B. Tucker, Andrea R. Rogers and Karin E. Schütz ..... 141
- The influence of season and of providing a water trough on stream use by beef cattle grazing hill-country in New Zealand  
Caroline S. Bagshaw, Bruce Thorrold, Michael Davison, Ian J.H. Duncan and Lindsay R. Matthews ..... 155
- Restlessness behaviour, heart rate and heart-rate variability of dairy cows milked in two types of automatic milking systems and auto-tandem milking parlours  
Lorenz Gygas, Isabelle Neuffer, Christine Kaufmann, Rudolf Hauser and Beat Wechsler ... 167
- Behavioural indicators of hunger in dairy calves  
Andreia De Paula Vieira, Vanessa Guesdon, Anne Marie de Passille, Marina Andrea Gräfin von Keyserlingk and Daniel Martin Weary ..... 180
- Behavioural responses by dairy cows provided two hays of contrasting quality at dry-off  
Reza Valizadeh, Douglas M. Veira and Marina A.G. von Keyserlingk ..... 190
- Avoidance of tape-recorded milking facility noise by dairy heifers in a Y maze choice task  
Naomi A. Arnold, Kim T. Ng, Ellen C. Jongman and Paul H. Hemsworth ..... 201
- Combining an active transponder system with sprayed *n*-alkanes to quantify investigative and ingestive grazing behaviour of dairy cattle in pastures treated with slurry  
David L. Swain, Michael A. Friend, Robert W. Mayes, Lyn A. Wilson and Mike R. Hutchings ... 211
- Milk allowance and weaning method affect the use of a computer controlled milk feeder and the development of cross-sucking in dairy calves  
Per Peetz Nielsen, Margit Bak Jensen and Lena Lidfors ..... 223

(Contents continued on page 410)

The instructions for Authors and other journal information can be found at  
<http://www.elsevier.com/locate/applan>

Available online at

 ScienceDirect  
[www.sciencedirect.com](http://www.sciencedirect.com)



0167-6369(200709)109:2;1-5



(Contents continued from outside back cover)

Maternal infanticide in sows: Incidence and behavioural comparisons between savaging and non-savaging sows at parturition Congying Chen, Colin L. Gilbert, Guangcheng Yang, Yuanmei Guo, Anne Segonds-Pichon, Junwu Ma, Gary Evans, Bertram Brenig, Carole Sargent, Nabeel Affara and Lusheng Huang . . .	238
The effect of varying lengths of straw bedding on the behaviour of growing pigs Jon E.L. Day, Heleen A. Van de Weerd and Sandra A. Edwards . . . . .	249
Exploring the basis of divergent selection for 'temperament' in domestic sheep Ngajo J. Beausoleil, Dominique Blache, Kevin J. Stafford, David J. Mellor and Alasdair D.L. Noble . . .	261
Repeated transport and isolation during pregnancy in ewes: Differential effects on emotional reactivity and weight of their offspring Sabine Roussel-Huchette, Paul Hamilton Hemsworth, Alain Boissy and Christine Duvaux-Ponter . . .	275
The novel object test as predictor of feather damage in cage-housed Rhode Island Red and White Leghorn laying hens Koen Uitdehaag, Hans Komen, T. Bas Rodenburg, Bas Kemp and Johan van Arendonk . . . . .	292
A counterbalanced version of Ainsworth's Strange Situation Procedure reveals secure-base effects in dog-human relationships Robyn Palmer and Deborah Custance . . . . .	306
Risk factors for separation-related distress and feed-related aggression in dogs: Additional findings from a survey of Australian dog owners Paul D. McGreevy and Abby M. Masters . . . . .	320
Behavioural correlation of heart rate changes in family dogs Katalin Maros, Antal Dóka and Ádám Miklósi . . . . .	329
The qualitative assessment of responsiveness to environmental challenge in horses and ponies Fabio Napolitano, Giuseppe De Rosa, Ada Braghieri, Fernando Grasso, Aldo Bordi and Françoise Wemelsfelder . . . . .	342
Reactivity to isolation and association with conspecifics: A temperament trait stable across time and situations Léa Lansade, Marie-France Bouïssou and Hans W. Erhard . . . . .	355
Larger, enriched cages are associated with 'optimistic' response biases in captive European starlings ( <i>Sturnus vulgaris</i> ) Stephanie M. Matheson, Lucy Asher and Melissa Bateson . . . . .	374
Effects of family housing on some behavioural and physiological parameters of juvenile farmed mink ( <i>Mustela vison</i> ) Sari Hänninen, Jaakko Mononen, Sanna Harjunpää, Teija Pyykönen, Juhani Sepponen and Leena Ahola . . . . .	384
Utility of social network analysis for primate behavioral management and well-being Brenda McCowan, Kristen Anderson, Allison Heagarty and Ashley Cameron . . . . .	396
<b>Short Communication</b>	
A note on genetic parameters for estrus symptoms in sows Sibylle Gäde, Jörn Bennewitz, Katrin Kirchner, Holger Looft, Pieter W. Knap, Georg Thaller and Ernst Kalm . . . . .	406

# APPLIED ANIMAL BEHAVIOUR SCIENCE

VOLUME 110 ISSUES 1-2 Contents

MARCH 2008

*(Abstracted/Indexed in: Agricola, Agricultural Engineering Abstracts, Animal Behaviour Abstracts, Biological Abstracts, Current Awareness in Biological Sciences, Current Contents/Agriculture, Biology & Environmental Sciences, Ecology Abstracts, Index Veterinarius, PsycINFO Psychological Abstracts, Veterinary Bulletin. Also covered in the abstract and citation database Scopus®. Full text available on ScienceDirect®.)*

**Special Issue: Early Weaning**

For contents see preliminary page vii

The instructions for Authors and other journal information can be found at  
<http://www.elsevier.com/locate/applan>

Available online at

 ScienceDirect

[www.sciencedirect.com](http://www.sciencedirect.com)



0167-6369(200803)110:1-2;1-B

## **Applied Animal Behaviour Science**

### **Special Issue**

EARLY WEANING

Guest Editor

Lise Dybkjær  
University of Aarhus  
Faculty of Agricultural Sciences  
Dept. of Animal Health, Welfare and Nutrition  
Blichers Allé 20  
P.O. Box 50 DK  
8830 Tjele, Denmark



Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

Applied Animal Behaviour Science 110 (2008) vii

APPLIED ANIMAL  
BEHAVIOUR  
SCIENCE

[www.elsevier.com/locate/applanim](http://www.elsevier.com/locate/applanim)

18 MAYO 2008

## Contents

(Abstracted/Indexed in: *Agricola*, *Agricultural Engineering Abstracts*, *Animal Behaviour Abstracts*, *Biological Abstracts*, *Current Awareness in Biological Sciences*, *Current Contents/Agriculture, Biology & Environmental Sciences*, *Ecology Abstracts*, *Index Veterinarius*, *PsycINFO Psychological Abstracts*, *Veterinary Bulletin*. Also covered in the abstract and citation database *Scopus*®. Full text available on *ScienceDirect*®.)

### Special Issue: Early Weaning

#### Editorial

Introduction to special issue on early weaning

Lise Dybkjær ..... 1

#### Papers presented

Implications of breaking mother–young social bonds

Ruth C. Newberry and Janice C. Swanson ..... 3

Understanding weaning distress

Daniel M. Weary, Jennifer Jasper and Maria J. Hötzel ..... 24

The effects of weaning on the domestic horse (*Equus caballus*)

Natalie K. Waran, Nancy Clarke and Mark Farnworth ..... 42

Welfare implications of artificial rearing and early weaning in sheep

Fabio Napolitano, Giuseppe De Rosa and Agostino Sevi ..... 58

A review of the behavioral and neurochemical consequences of early weaning in rodents

Takefumi Kikusui, Kayo Nakamura and Yuji Mori ..... 73

Maternal deprivation and the development of stereotypic behaviour

Naomi R. Latham and G.J. Mason ..... 84

Development of ingestive behaviour and the relationship to belly nosing in early-weaned piglets

Tina M. Widowski, Stephanie Torrey, Clover J. Bench and Harold W. Gonyou ..... 109

Transport of early weaned piglets

Nora J. Lewis ..... 128

Weaning distress in dairy calves: Acute behavioural responses by limit-fed calves

Jennifer Jasper, Monika Budzynska and Daniel M. Weary ..... 136

Response of dairy cows and calves to early separation: Effect of calf age and visual and auditory contact after separation

Ilona Stěhulová, Lena Lidfors and Marek Špinka ..... 144

Effects of weaning age on the behavioural and neuroendocrine development of piglets

Susan Jarvis, Christine Moinard, Sheena K. Robson, Barbara E.H. Summer, Alison J. Douglas, Jonathan R. Seckl, John A. Russell and Alistair B. Lawrence ..... 166

Social isolation elicits deficits in the ability of newly weaned female piglets to recognise conspecifics

Adriana S. Souza and Adroaldo J. Zanella ..... 182

Effects of pre-weaning exposure to a maze on stress responses in pigs at weaning and on subsequent performance in spatial and fear-related tests

Janice M. Siegford, Gloria Rucker and Adroaldo J. Zanella ..... 189

The effect of feed restriction on belly nosing behaviour in weaned piglets

Andrea Bruni, V. Margaret Quinton and Tina M. Widowski ..... 203



# APPLIED ANIMAL BEHAVIOUR SCIENCE

18 MAYO 2008

VOLUME 110 ISSUES 3-4 Contents

APRIL 2008

(Abstracted/Indexed in: *Agricola*, *Agricultural Engineering Abstracts*, *Animal Behaviour Abstracts*, *Biological Abstracts*, *Current Awareness in Biological Sciences*, *Current Contents/Agriculture, Biology & Environmental Sciences*, *Ecology Abstracts*, *Index Veterinarius*, *PsycINFO Psychological Abstracts*, *Veterinary Bulletin*. Also covered in the abstract and citation database *Scopus*<sup>®</sup>. Full text available on *ScienceDirect*<sup>®</sup>.)

## Review Article

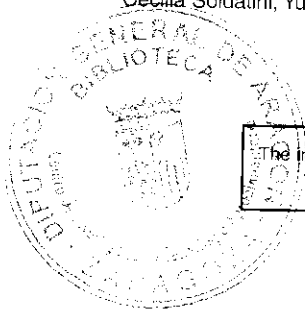
- Selection method and early-life history affect behavioural development, feather pecking and cannibalism in laying hens: A review  
T. Bas Rodenburg, Hans Komen, Esther D. Ellen, Koen A. Uitdehaag and Johan A.M. van Arendonk ..... 217

## Original Papers

- Effect of repeated regrouping and relocation on behaviour of steers  
Sandeep Gupta, Bernadette Earley, Michael Nolan, Elena Formentin and Mark A. Crowe ... 229
- The influence of age on the use of potential enrichment objects and synchronisation of behaviour of pigs  
Caroline M. Docking, Heleen A. Van de Weerd, J.E.L. Day and Sandra A. Edwards .... 244
- Entire male pigs in farrow-to-finish pens—Effects on animal welfare  
Bente Fredriksen, Bjørn Magne Lium, Cathrine Hexeberg Marka, Birgitte Mosveen and Ola Nafstad ..... 258
- Prevention and treatment of tail biting in weaned piglets  
Johan J. Zonderland, Maaïke Wolthuis-Fillerup, Cornelis G. van Reenen, Marc B.M. Bracke, Bas Kemp, Leo A. den Hartog and Hans A.M. Spoolder ..... 269
- Social reinstatement responses of meat-type chickens to familiar and unfamiliar conspecifics after exposure to an acute stressor  
Diego A. Guzman and Raul H. Marin ..... 282
- Effects of early gentling and early environment on emotional development of puppies  
Angelo Gazzano, Chiara Mariti, Lorella Notari, Claudio Sighieri and Elizabeth Anne McBride ..... 294
- Personality dimensions that emerge in companion canines  
Jacqueline Ley, Pauleen Bennett and Grahame Coleman ..... 305
- Clicker increases resistance to extinction but does not decrease training time of a simple operant task in domestic dogs (*Canis familiaris*)  
Shawn M. Smith and Ellen S. Davis ..... 318
- Testing the efficacy of deterring systems in two gull species  
Cecilia Soldatini, Yuri Vladimir Albores-Barajas, Patrizia Torricelli and Danilo Mainardi ... 330

(Contents continued on page 410)

The instructions for Authors and other journal information can be found at  
<http://www.elsevier.com/locate/applan>



0167-6369(200804)110:3-4;1-K

Available online at

 ScienceDirect

[www.sciencedirect.com](http://www.sciencedirect.com)

(Contents continued from outside back cover)

A targeted approach to developing environmental enrichment for two strains of laboratory mice Christine J. Nicol, Sarah Brocklebank, Michael Mendl and Chris M. Sherwin .....	341
Wheat or barley? Feeding preferences affect distribution of three rodent species in agricultural landscape Marta Heroldova, Emil Tkadlec, Josef Bryja and Jan Zejda .....	354
Evaluation of different observational sampling regimes for use in zoological parks Susan W. Margulis and Eric J. Westhus .....	363
Group differences in captive gorillas' reaction to large crowds Christopher W. Kuhar .....	377
<b>Short Communications</b>	
A note on the effects of co-mingling piglet litters on pre-weaning growth, injuries and responses to behavioural tests Vanessa T. Kanaan, Edmond A. Pajor, Donald C. Lay Jr., Brian T. Richert and Joseph P. Garner .....	386
Is order of voluntarily entrance to milking parlour related to <i>Toxoplasma gondii</i> infection in sheep— A brief note Marcin T. Gorecki, Izabela Andrzejewska and Ryszard Steppa .....	392
A note on the effect of vasectomised rams and short-term exposures to entire rams prior to the breeding period on the reproductive performance of ewe lambs P.R. Kenyon, P.C.H. Morel, S.T. Morris and D.M. West .....	397
A note on pre-spawning maternal cortisol exposure in farmed Atlantic salmon and its impact on the behaviour of offspring in response to a novel environment Asa Maria Espmark, Marit Skog Eriksen, Ragnar Salte, Bjarne Olav Braastad and Morten Bakken .....	404

**CONTENTS** Volume 48, Issue 3, 2008, 265–386

WATER TO GOLD

Foreword

*Liz Humphreys, Kieran O’Keeffe and Nick Hutchins* iii–iv

Managing climate risks in Australia: options for water policy and irrigation management.

*Shahbaz Khan* 265–273

On-farm measurement of the water use and productivity of maize.

*K. L. Greenwood, G. N. Mundy and K. B. Kelly* 274–284

Maize productivity in southern New South Wales under furrow and pressurised irrigation.

*C. J. O’Neill, E. Humphreys, J. Louis and A. Katupitiya* 285–295

Analysis of high yielding maize production – a study based on a commercial crop.

*C. J. Birch, G. McLean and A. Sawers* 296–303

Evaluation of strategies for increasing irrigation water productivity of maize in southern New South Wales using the MaizeMan model.

*E. Humphreys, R. J. G. White, D. J. Smith and D. C. Godwin* 304–312

Optimising maize plant population and irrigation strategies on the Darling Downs using the APSIM crop simulation model.

*A. S. Peake, M. J. Robertson and R. J. Bidstrup* 313–325

Reliability of production of quick to medium maturity maize in areas of variable rainfall in north-east Australia.

*C. J. Birch, K. Stephen, G. McLean, A. Doherty, G. L. Hammer and M. J. Robertson* 326–334

Architectural modelling of maize under water stress.

*Colin J. Birch, David Thornby, Steve Adkins, Bruno Andrieu and Jim Hanan* 335–341

Risk management for mycotoxin contamination of Australian maize.

*L. K. Bricknell, B. J. Blaney and J. Ng* 342–350

Managing mycotoxins in maize: case studies.

*B. J. Blaney, K. O’Keeffe and L. K. Bricknell* 351–357

Modelling climatic risks of aflatoxin contamination in maize.

*Y. S. Chauhan, G. C. Wright and N. C. Rachaputi* 358–366

The *Pythium–Fusarium* root disease complex – an emerging constraint to irrigated maize in southern New South Wales.

*P. R. Harvey, R. A. Warren and S. Wakelin* 367–374

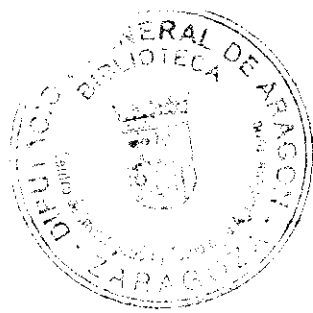
Life cycle assessment of greenhouse gas emissions from irrigated maize and their significance in the value chain.

*Tim Grant and Tom Beer* 375–381

Soil nitrogen dynamics in irrigated maize systems as impacted on by nitrogen and stubble management.

*R. B. Edis, D. Chen, G. Wang, D. A. Turner, K. Park, M. Meyer and C. Kirkby* 382–386





**NEWS**

Australia Day Honours <i>van der Steege</i> .....	N2
AVJ Online <i>Jackson</i> .....	N2
Animal welfare and the AVA <i>Doyle</i> .....	N4
Viewpoint <i>With AVA President Dr Diane Sheehan</i> .....	N6
Leadership workshop <i>Carr</i> .....	N8
Nominations for the AVA Board.....	N10
Members February 2008 <i>van der Steege</i> .....	N11
Memoriam <i>Jackson</i> .....	N12
All the Prime Minister's men.....	N12
AVA Annual Conference 2008 <i>Walker</i> .....	N14
Conservation at Camden <i>Jackson</i> .....	N18
Complaints mediation process <i>Gibbs</i> .....	N19
World Watch <i>With Australian Chief Veterinary Officer Dr Andy Carroll</i> .....	N22
The newest AVA New Graduate Friendly Practice <i>van der Steege</i> .....	N22
Letters and perspectives: AVPMA.....	N24
Instructions for classified advertising.....	N26
Barry dates <i>Frank</i> .....	N28

**SCIENTIFIC & CLINICAL**

**FROM THE EDITORS**

In this issue <i>A Jackson and M Revington</i> .....	111
Letter to the editor.....	113
Suicide in Australia veterinarians <i>H Jones-Fairnie, P Ferroni, S Silburn and D Lawrence</i> .....	114
Cross species transmission of ovine Johne's disease from sheep to cattle: an estimate of prevalence in exposed susceptible cattle <i>BJ Moloney and RJ Whittington</i> .....	117
Serologic cross-reactivity of Australian <i>Moraxella bovis</i> to vaccinal bacterin strains as determined by competitive ELISA <i>CS McConnell, I. Shum, BL Gleeson and JK House</i> .....	124
An extended outbreak of congenital chondrodysplasia in calves in South East Australia <i>JG Cave, PJ McLaren, SJ Whittaker, I. Rast, A Stephens and EM Parker</i> .....	130
Isolation of caprine herpesvirus 1 from a major outbreak of infectious pustular vulvovaginitis in goats <i>KI. Piper, CJ Fitzgerald, N Ficorilli and MJ Studdert</i> .....	136
Hypokalaemic paresis, hypertension, alkalosis and adrenal-dependent hyperadrenocorticism in a dog <i>DR Davies, SF Foster, BJ Hopper, KI. Staudte, AJ O'Hara and PJ Irwin</i> .....	139
Susceptibility of canine and feline <i>Escherichia coli</i> and canine <i>Staphylococcus intermedius</i> isolates to fluoroquinolones <i>S Gottlieb, Di Wigney, PA Martin, JM Norris, R Malik and M Govendir</i> .....	147
Suspected primary scapulohumeral osteoarthritis in two Miniature ponies <i>RA Parib, LS Svalbe, GH Hazard and S Church</i> .....	153
<b>BOOK REVIEW</b> Zoo & Wild Animal Medicine: Current Therapy <i>K Herrin</i> .....	123
<b>OBITUARY</b> Richard Dixon <i>BR Richardson</i> .....	135
<b>CONTINUING EDUCATION</b> Quiz April 2008 <i>M Revington</i> .....	CE1

**CLASSIFIEDS**

Classifieds .....	C1-C13
-------------------	--------

**AVA SUPPORTERS**

Gold supporters

Platinum affinity partner

Bronze supporter

Sponsor



CareCredit



**NEWS**

Holy Nieper, Member of the Order of Australia  
*Jackson*..... N2

Roger Clarke wins Hill's Animal Welfare and Humane Ethics Award  
*Jackson*..... N2

Improved remuneration for private veterinarians involved in disease response  
*Barry*..... N4

Viewpoint  
*With AVA President Dr Diane Sheehan*..... N6

What does the AVA do?  
*Catt*..... N8

Land Transport Standards open for public comment  
*de Witte*..... N8

Media update  
*Balzer*..... N10

New Executive Officer for the ASAVA  
*Nalletamby*..... N11

Donations for orangutans in Borneo  
*Jackson*..... N11

Australian Holistic Veterinarians  
*Smith*..... N12

AVA Annual Conference 2008  
*Walker*..... N14

World watch  
*With Chief Veterinary Officer Dr Andy Carroll*..... N16

Visibility in the sights of new Communications Manager  
*Jackson*..... N17

Unusual and Exotic Pets (UEP) scholarship  
*Fowler*..... N18

Recognising avian influenza: a resource for veterinarians and animal health officers  
*Brodie*..... N18

HR Matters  
*Wilkinson*..... N20

NetPEP vets reach out to the pet owners of the future  
*Nalletamby*..... N22

Letters and perspectives  
*Auty*..... N23

Diary dates  
*Frank*..... N24

**SCIENTIFIC & CLINICAL**

**FROM THE EDITORS**

In this issue  
*A Jackson & M Revington*..... 157

Impact of topical anaesthesia on pain alleviation and wound healing in lambs after mulesing  
*S Lomax, M Sheil and PA Windsor*..... 159

Use of transcolonic portal scintigraphy to evaluate efficacy of cellophane banding of congenital extrahepatic portosystemic shunts in 16 dogs  
*BP Landon, LA Abraham and JA Charles*..... 169

Ascites due to pre-sinusoidal portal hypertension in dogs: a retrospective study of 17 cases  
*F James, G Knowles, C Mansfield and I Robertson*..... 180

Pharmacokinetics of potassium bromide in adult horses  
*SL Radial and S Edwards*..... 187

Surgical treatment of carpal flexural deformity in 72 horses  
*RF Charman and JR Vasey*..... 195

Hepatozoon tachyglossi in the short-beaked echidna (*Tachyglossus aculeatus*)  
*R Pioeg, V Nicolson, M Pyne, R Webb and P O'Donoghue*..... 200

**BOOK REVIEW**

Companion Fatigue in the Animal Care Community  
*H Jones-Fairnie*..... 186

**OBITUARY**

Thomas Hungerford  
*D Bryden and J Bryden*..... 194

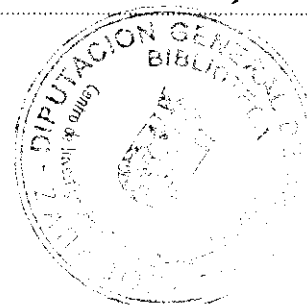
Bernard Doyle  
*K Doyle*..... 202

**CONTINUING EDUCATION**

Quiz May 2008  
*M Revington*..... CE1

**CLASSIFIEDS**

Classifieds..... C1-C13



**AVA SUPPORTERS**

Gold supporters

Platinum affinity partner

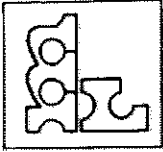
Bronze supporter

Sponsor



CareCredit





/ 8 MAYO 2008

# mercolleida

Mercado en origen



BOLETÍN INFORMATIVO AGROPECUARIO DE LA LONJA DE MERCOLLEIDA

NÚMERO 2.074 — AÑO XXXV

SESIONES DE LONJA DEL 21 AL 25 DE ABRIL DE 2008

## SEMANAS 17-18/2008

### HECHOS PRECIOS

#### MAYORÍA DE EDAD A LOS 30.

La Comisión Europea ha acordado hoy elevar de 24 a 30 meses la edad de retirada del espinazo del vacuno (o columna vertebral), hueso del que procede el llamado "chuletón". Bruselas ha flexibilizado así una de las medidas más conocidas que impuso en el 2000 para evitar el peligro de propagación de la EEB, afectando entonces a los animales de más de 12 meses.

Posteriormente, en el 2005, se decidió elevar la edad de restricción a la carne de vacuno de 24 meses, por considerar que la situación había mejorado y que los riesgos cada vez se limitaban más a las reses de mayor edad, para quedar fijada actualmente por encima de los 30 meses.

**CERDO CEBADO: 1,120 (-0,025).**- Los importantes movimientos al alza de la cotización producidos en febrero, hacían presagiar que a finales de abril se terminaría la larga travesía del negro túnel por la que transcurre la rentabilidad del cebadero. La sesión de mercado de esta última semana de abril, se abrió con los datos del mercado que ofrecían un descenso de 455 gramos en el peso en vivo y de 413 en el peso en canal. Estas cifras, en otras circunstancias, hubieran constituido munición suficiente para que el cebadero pudiera defenderse sin demasiados problemas de las presiones a la baja inducidas por los mataderos. /página 3

**TERNERA CRUZADA 180-230 KG "R": 3,75 (=)**.- Repetición general de los precios de todas las clasificaciones. De entrada, el mantenimiento de los precios podría dar a entender que, en su conjunto, el mercado ha llegado a una situación de equilibrio. Pero la realidad del día a día no parece ser tal. /página 3

**MAÍZ LLEIDA: 208,00 (-4,00).**- El comprador, al igual que el cielo de la geografía española, se muestra muy cubierto, y poco dispuesto a operar en un mercado al que todavía le falta mucho para poderlo calificar de normalizado. Todo operador que se precie sabe que la actual situación del mercado cerealista dispone de varios frentes a los que debe de prestar atención antes de tomar decisiones de compra o de venta. /página 17

**MANZANA GOLDEN 70+: 0,43-0,48 (+0,03).**- La tablilla recoge ligeras modificaciones en los precios de cada una de las variedades, lo que concuerda con la situación de mercado que se ha dejado entrever en las últimas semanas. Durante abril, la Conferencia ha sido la variedad que ha concentrado las miradas de la demanda, seguida de la Golden, con un ritmo de ventas que han empezado a repuntar, lo que ha acabado por clarificar unas posiciones más firmes en ellas. /página 19

#### DESAYUNOS-MERCO

#### EL "CHEQUEO MÉDICO" DE LA PAC NUEVAS PROPUESTAS DE CAMBIO

Desayuno-Coloquio con:

**Sr. Albert Massot i Martí,**  
Administrador Principal  
del Parlamento Europeo

**Llotja Agropecuària Mercolleida**  
Av. Tortosa, 2 2005 Lleida

29 de abril de 2008, 9:45 h.

#### LA PRÓXIMA LONJA SE CELEBRARÁ EL VIERNES 2

Debido al festivo del 1 de mayo, la próxima sesión de Lonja se pospone al viernes 2 de mayo por la mañana, a partir de las 12:00 h.

### DATOS

#### DE IGUAL A IGUAL.

La producción de melocotón, nectarina y pavia en la UE en la cosecha de 2008 se prevé igual a la del año anterior situándose en unos 3,8 millones de toneladas. Estas previsiones han sido presentadas en el XX foro internacional Europech, celebrado los días 23 y 24 de abril en Perpignan (Francia), con datos extraídos de las previsiones nacionales de los principales países productores como España, Italia, Francia y Grecia. El récord de producción lo ostentan las campañas de 2005 y la de 2002, con sendas cosechas de 4,1 y 4,0 millones de toneladas.

\* **España: +6%:** La producción se

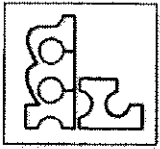
situará en un volumen de 1.107.000 toneladas. Las malas condiciones climatológicas en las zonas de Valencia, han diezmado la producción, se prevé una bajada de -16% en esta zona.

\* **Grecia: +3%:** Continúa el aumento por tercer año consecutivo. Se esperan para el 2008 unas 867.000 toneladas.

\* **Italia: +1%:** La producción italiana de fruta de hueso prevé un ligero descenso de respecto al año pasado, situándose en unas 1.566.000 tn. La zona del Piemonte/Lombardia/Liguria espera un importante descenso del -16%.

\* **Francia: -19%:** La producción francesa prevé un volumen de 294.300 tn, con un descenso del -19% en relación al año anterior. La mayor bajada se espera en la zona PACA (Provence-Alpes Cote d'Azur) con un -21%.

Ver estadística en página 19



# mercolleida

Mercado en origen



BOLETÍN INFORMATIVO AGROPECUARIO DE LA LONJA DE MERCOLLEIDA

NÚMERO 2.075 — AÑO XXXV

SESIONES DE LONJA DEL 28 DE ABRIL AL 2 DE MAYO DE 2008

## SEMANAS 18-19/2008

### HECHOS PRECIOS

#### LA CEBADA MÁS VIADERA.

Las importaciones de cebada que ha ido realizando Arabia Saudí durante esta campaña han traído de cabeza a no pocos operadores de la compra, sobre todo españoles, que veían cómo no había disponibilidades importantes en el mercado interior, mientras esas ventas exteriores propulsaban todavía más los precios al alza. La mayor parte de estas exportaciones de España se realizaron en el tramo final de 2007, pero en lo que llevamos de 2008 no han faltado tampoco rumores sobre posibles nuevas exportaciones de cebada desde España. Al final, las frías estadísticas muestran que, efectivamente, en enero se exportaron desde España apenas 50 toneladas de cebada para Arabia Saudí, pero que en los dos meses siguientes ya no ha habido ningún tipo de actividad. En el primer trimestre de 2008, Arabia Saudí ha importado 2.114 toneladas de cebada, es decir, tan sólo un 1% más que en el mismo trimestre de 2007. Australia ha suministrado el 37% de esta cebada y Canadá, otro 25%.

Ver estadísticas en página 17

#### LA COSECHA QUE SE AVECINA.

El Consejo Internacional de cereales (CIC) estima la producción mundial de cereales en 2008 en 1.706 millones de tn, un aumento de 37 millones respecto al récord del año pasado. Se prevé que el consumo mundial aumente en un 1,7%, hasta los 1.710 millones de tn (el año pasado, 3,5%), reflejando cierta desaceleración de la expansión de la industria del etanol en EEUU y cierto descenso del consumo de cereales pienso. Pese a los altos precios, puede haber un aumento ligero del consumo alimentario de cereales. Se prevé que las existencias mundiales se mantengan en niveles bajos, sobre todo en EEUU. Cabe esperar un leve descenso del comercio mundial de cereales, aunque la reducción del comercio de maíz y sorgo compensará con holgura el aumento del de trigo.

Ver página 7

**CERDO CIBADO: 1,139 (-).** El mercado del día de trabajo después del Día Del Trabajo, debe de considerarse como el que establece pista libre de festivos primaverales, para ya una vez libre de interferencias, enfrentar la ruta que debe de llevar la cotización del cebado hacia su máximo estacional del verano. Sin embargo, la semana del Primero de Mayo, (y del 2 de Mayo en el importante y -hoy por hoy- desajustado mercado de Madrid), ha pasado haciendo cierta mella en los datos de mercado. *página 3*

**TÉRNERA CRUZADA 180-230 KG "B": 3,66 (-0,06)** - La concurrencia en el mercado de elementos que, no por sabidos han a comportar un efecto menor, se han configurado como detonantes para que los precios de los machos y, sobre todo los de las hembras, acabaran por inclinarse a la baja. *página 10*

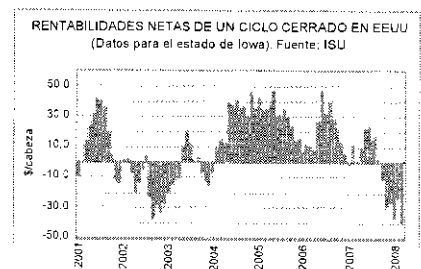
**CEBADA NACIONAL: 193,00 (-4,00).** Mínima actividad, la registrada esta semana en los mercados cerealistas nacionales. Sea por el festivo, sea (más bien) porque se retira el interés comprador para forzar nuevos descenso y se retira también el interés vendedor, harto de tanto bajar para no vender mucho más, sea por lo que sea, todo está muy parado. Y eso quiere decir precios a la baja, y ausencia de influencia de los mercados de futuros internacionales en los mercados del físico. *página 17*

**MANZANA GOLDEN 70+; 0,43-0,50 (+0,01)** - La Golden afianza de nuevo sus posiciones de precio, para situarse en los 50 céntimos como referencia de precio máximo, sin dejar de lado el nivel mínimo de 43 céntimos, en el que están representadas las partidas de menor calidad. La reacción de la Golden ha venido acompañada de la firmeza de precios en la oferta de procedencia exterior, Francia e Italia, que también han elevado sus precios, estirando al alza la del país. *página 19*

### DATOS

#### EN PÉRDIDAS DESDE OCTUBRE.

La Universidad Estatal de Iowa (ISU) mantiene una serie estadística sobre los márgenes de rentabilidad de la producción porcina en ese estado (pérdidas y beneficios netos por mes). En el gráfico adjunto puede observarse cómo, después de casi cuatro año de beneficios, se ha entrado en pérdidas desde octubre del año pasado. Esta serie histórica, que va de 1998 a 2007, aporta también otros datos curiosos.



Como que los meses más rentables son de mayo a agosto, que en estos últimos diez años el 58% de los meses han arrojado beneficios frente a un 42% de pérdidas, o que el 30% de los meses tiene unos resultados que se mueven entre los +10 \$ y los -10 \$ por cerdo.

/ 9 MAYO 2008

***BOLETINES DE AVISOS E INFORMACIONES***



**Zaragoza, 2007**



/ 9 MAYO 2008



BOLETÍN DE SANIDAD VEGETAL  
PLAGAS

**VOLUMEN 33**  
**n m. 4**  
**2007**  
**4-Trimestre**

DIRECTOR

*Francisco Mombiola*

DIRECTORA ADJUNTA

*Cristina Clemente*

REDACTORA JEFE

*Adela Burgos*

CONSEJO DE REDACCIÓN

*Antonio Bello*

*Juan I. Calvo*

*José M.<sup>a</sup> Cobos*

*Pedro del Estal*

*José García-Jiménez*

*Concepción Jordá*

*Alfredo Lacasa*

*Cristina Noval*

*Cándido Santiago*

*Julio C. Tello*

*Juan J. Tuset*

*Carlos Zaragoza*

EDITOR

*Centro de Publicaciones*

*Agrarias, Pesqueras y*

*Alimentarias*

ISSN: 0213-6910

NIPO: 251-07-014-1

Déposito Legal: M-2975-1976

Imprime: I.G. Saljen, S.L.

## SUMARIO

### ENTOMOLOGÍA

I. ARMENDÁRIZ, L. DE LA IGLESIA, Y. SANTIAGO, G. CAMPILLO, C. ALBERTE, L. MIRANDA, S. JUÁREZ, A. PÉREZ-SANZ. Ciclo del prays del olivo (*Prays oleae* Bern.) en Arribes del Duero ..... 443

M. V. MUJICA, I. B. SCATONI, J. FRANCO, S. NUÑEZ, C. M. BENTANCOURT. Fluctuación Poblacional de *Frankliniella occidentalis* (Pergande) (Thysanoptera: Thripidae) en *Vitis vinifera* L. cv. Italia en la Zona Sur de Uruguay ..... 457

L. VALVERDE, E. VIRLA. Parasitismo natural de huevos de las principales especies de Noctuidae (Lepidoptera) plagas en el cultivo de soja en Tucumán, Argentina ..... 469

I. ARMENDÁRIZ, G. CAMPILLO, A. PÉREZ-SANZ, C. CAPILLA, J. S. JUÁREZ, L. MIRANDA. La polilla del racimo (*Lobesia botrana*) en la D.O. Arribes, años 2004 a 2006 ..... 477

A. IBÁÑEZ-JUSTICIA, A. SOTO, M. MARTÍNEZ GONZALVO, E. PÉREZ-LAORGA ARIAS. Distribución y abundancia de *Lymantria dispar* (Linnaeus, 1758) (Lepidoptera: Lymantriidae) en las principales masas de carrasca *Quercus ilex* (L.) subsp. *rotundifolia* (Lam.) y alcornoque *Quercus suber* (L.) de la Comunitat Valenciana ..... 491

### PATOLOGÍA

L. OTERO, O. AGUÍN, M. J. SAINZ, J. P. MANSILLA. El género *Mycosphaerella* en plantaciones de *Eucalyptus* de Galicia ..... 503

ANA J. GONZÁLEZ, M. ROSARIO RODICIO. Caída de botón floral en kiwi causada por *Pseudomonas viridiflava* y *Pseudomonas syringae* en el Principado de Asturias ..... 517

M. E. SÁNCHEZ, N. LUCHI, J. E. SÁNCHEZ, J. J. JIMÉNEZ, A. TRAPERO, P. CAPRETTI. La podredumbre radical del pinsapo I: Identificación específica del agente causal ..... 527

P. DE VITA, J. J. JIMÉNEZ, A. TRAPERO, P. CAPRETTI, M. E. SÁNCHEZ. La podredumbre radical del pinsapo II: Diseminación de *H. abietinum* en bosques de *Abies pinsapo* ..... 537

D. RODRÍGUEZ-JURADO, J. BEJARANO-ALCÁZAR. Dispersión de *Verticillium dahliae* en el agua utilizada para el riego de olivares en Andalucía ..... 547

**TERAPÉUTICA**

- E. B. COUTO, C. F. WILCKEN, F. B. SARRO, E. D. VELINI. Avaliação de metil jasmonato na indução de resistência de plantas de *Eucalyptus* spp. ao psilídeo-de-concha *Glycaspis brimblecombei* Moore (Hemiptera: Psyllidae) ..... 563
- M. BOTTON, A. NONDILLO, M. ZART, S. PINENT, W. GENTA. Avaliação de inseticidas para o controle de *Frankliniella rodeos* (Moulton, 1933) (Thysanoptera: Thripidae) em uva de mesa no Brasil ..... 575

**OTROS TEMAS**

- J. SNAIKI, A. NADIF, M. OUHSSINE. El establecimiento de una cartografía de algunas plagas de la remolacha azucarera de la región del Gharb en Marruecos ..... 581
- J. E. ARAYA, T. CURKOVIC, A. CAYO. Uso de irradiación gamma como método de control cuarentenario de *Frankliniella australis* (Morgan) (Thysanoptera: Thripidae) ..... 589
- RECENSIÓN DE PUBLICACIONES ..... 595

### Table des matières • Contents

- 1 **Normes OEPP – Procédures phytosanitaires/EPPO Standards – Phytosanitary procedures**
- 4 PM 3/66 (2): Guidelines for the management of plant health risks of biowaste of plant origin
- 11 **Normes OEPP – Schémas pour la production de végétaux sains destinés à la plantation/EPPO Standards – Schemes for the production of healthy plants for planting**
- 14 PM 4/9 (2): Certification scheme for *Ribes*
- 19 PM 4/32 (1): Certification scheme for *Sambucus*
- 25 PM 4/33 (1): Certification scheme for poplar and willow
- 31 PM 4/34 (1): Production of pathogen-tested herbaceous ornamentals
- 53 **Normes OEPP – Fiches informatives sur les organismes de quarantaine/EPPO Standards – Data sheets on quarantine pests**
- 55 *Rhynchophorus ferrugineus*
- 60 *Hesperophanes campestris*
- 65 **Recommendations and conclusions of the Ad hoc EPPO Workshop on insecticide resistance of *Meligethes* spp. (pollen beetle) on oilseed rape**
- 68 D. M. RICHARDSON  
Summary of findings from a participant country pollen beetle questionnaire
- 73 D. M. RICHARDSON  
Pollen beetle in the UK: the start of a resistance problem?
- 75 M. DÉLOS  
Méligèthes du colza: Evolution et gestion des résistances aux pyréthrinoïdes en France et recommandations pour gérer le risque
- 79 H. GLATTKOWSKI, B. SAGGAU & G. GOEBEL  
Experiences in controlling resistant pollen beetle by type I ether pyrethroid Trebon 30 EC in Germany
- 85 A. MÜLLER, U. HEIMBACH & T. THIEME  
Pyrethroid sensitivity monitoring in Germany of oilseed rape pest insects other than pollen beetle
- 91 P. WĘGOREK & J. ZAMOYSKA  
Current status of resistance in pollen beetle (*Meligethes aeneus* F.) to selected active substances of insecticides in Poland
- 95 L. M. HANSEN  
Occurrence of insecticide resistant pollen beetles (*Meligethes aeneus* F.) in Danish oilseed rape (*Brassica napus* L.) crops
- 99 T. M. THILIKAINEN & H. M. T. HOKKANEN  
Pyrethroid resistance in Finnish pollen beetle (*Meligethes aeneus*) populations – is it around the corner?
- 104 H. M. T. HOKKANEN  
Biological control methods of pest insects in oilseed rape
- 110 S. M. COOK & I. DENHOLM  
Ecological approaches to the control of pollen beetles in oilseed rape
- 114 T. THIEME, U. DRBAL, K. GLOYNA & U. HOFFMANN  
Different methods of monitoring susceptibility of oilseed rape beetles to insecticides

Contents continued on inside back cover

/ 9 MAYO 2008



## SOMMAIRE

### SÉANCES DE NOVEMBRE - DÉCEMBRE 2007

---

- 3        **NANOTECHNOLOGIE ET ALIMENTATION**  
 Séance animée par **Pierre Feillet** (28 novembre 2007)  
 Nanobiosenseurs olfactifs basés sur des levures renifleuses, par **Édith Pajot-Augy**.  
 Nano-encapsulation et vectorisation : principe, applications et toxicité potentielle, par **Hatem Fessi**.  
 Nanotechnologies : gestion citoyenne des risques et questions éthiques, par **Patrice Marche**.
- 13       **LES RIBO-RÉGULATEURS : NOUVEAUX ACTEURS DYNAMIQUES DU VIVANT**  
 Séance commune avec l'Académie des Sciences, animée par **Georges Pelletier** (5 décembre 2007)  
 La variété des riborégulateurs et de leurs rôles, par **Hervé Vaucheret**.  
 Les ribo-régulateurs dans la défense contre les pathogènes, par **Olivier Voinnet**.  
 Les ribo-régulateurs et la "mémoire" cellulaire, par **Vincent Colot**.
- 29       **LA BIOMASSE ET LES BIOCARBURANTS**  
 Séance animée par **Ghislain Gosse** (12 décembre 2007)  
 Les voies biologiques de la conversion de la biomasse, aujourd'hui et demain, par **Michael O'Donohue**.  
 Biomasse, biocarburants, évaluation environnementale, par **Anne Prieur**.  
 Les biocarburants dans l'Union européenne et aux États-Unis : soutien public et liens avec les politiques agricoles et environnementales, par **David Tréguer**.
- 41       **ÉVOLUTION DES TECHNIQUES CULTURALES EN EUROPE ET DANS LE NOUVEAU MONDE VITICOLE**  
 Séance animée par **Patrice Desmarest** (19 décembre 2007)  
 Innovations techniques viticoles en Europe et leurs conditions d'utilisation, par **Alain Carbonneau**.  
 La viticulture en Amérique latine, une menace pour la France, par **Hernan Ojeda**.  
 Valeur et typicité des vins, rôle des techniques viticoles, par **Denis Dubourdieu**.

**PUBLICATIONS** 

---

55      Analyses d'ouvrages

**VIE DE L'ACADÉMIE** 

---

59      Nécrologies, par **Jacques Risse**

61      Les visites de l'Académie, par **Claude Sultana**

## Comment

### Point of no return

Grain prices have increased considerably in the last few years, which also had its effects on prices for animal feed. But clever feed manufacturers managed to have feed prices raised at a slower pace than would be expected from raw material price developments on the world market. Small movements in supply and demand have huge effects on the grain market. Increasing demand for biofuels is often mentioned as one of the main reasons for the price increases, but in Europe only 1-2% of grain production is used for making bio-ethanol. The situation in the US is completely different, where around 25% of the corn harvest is used for ethanol. This volume, however, has such an impact that it distorts the international grains market. Increased worldwide demand for meat products and extremely poor harvests in major grain growing areas also added to the doubling of grain prices in a two-year period. The zero-tolerance policy in the EU towards GMO raw materials is an extra hurdle for the European feed industry. Keeping feed prices at their lowest without losing money is a real challenge, which feed manufacturers only can overcome by using alternative ingredients in the feeds. Ethanol production in the US is heavily subsidised and resulted in a shift in crop growing areas from soybeans to corn. Because corn is used for bio-ethanol production, prices moved upwards and because the soybean area decreased, an upward movement in prices was also brought about. This encouraged US feed millers to gain interest in other ingredients than corn and soy to keep feed prices down. At the International Feed Expo in Atlanta in January this already could be observed where there was an increased interest in feed formulation software. High prices for grains have made products such as sorghum from Argentina, corn from Brazil, or tapioca from Thailand interesting products to substitute regular ingredients. This of course requires flexibility of the feed compounder and also an international port within reasonable distance comes in handy. Looking at the developments in the biofuel market it will also be a must for feed millers to be able to use a more diverse spectrum of feed ingredients. Increased demand for biofuels is not an immediate threat to the feed industry. Biofuel production also produces co-products that can be used in animal feed. But, a real threat occurs when more economical uses of these co-products are found, and when biofuel production from biomass gains momentum. Then there are no co-products and competition for land also becomes an issue. Where biomass is produced no grains can be grown. These market movements indicate that there is little chance that we return to the price levels of two years ago.



## Contents

### Global update

## 6 News from around the world

### Preview

## 10 VIV Europe migrates to Moscow



In an analysis of developments in markets throughout the world, VIV has identified Russia and Eastern Europe as being the new markets with the most trading potential for animal husbandry businesses. This calls for a trade event with an international reputation for these new markets in the form of the VIV Europe 2008 Moscow Edition.

### Market

## 13 GMOs: Should the European Union give in?

European livestock producers and feed compounders are in a quandary. The European Union's famously strict policy on Genetically Modified Organisms (GMOs) is at such odds with the rest of the world's protein feed producers that they're at risk of being completely left out of the market.



### Raw materials

## 16 SSF technology favours the animal feed industry

In recent years an 'old' technology, that of solid state fermentation (SSF) has been re-tooled for the production of enzyme complexes for animal feed. Trials in pigs and broilers showed that these enzymes may be favoured over enzymes produced during conventional submerged liquid fermentation processes.



<http://www.>

More opinions and discussions can be viewed at [www.AllAboutFeed.net/blogs](http://www.AllAboutFeed.net/blogs)

**Raw materials****18 Wet feeds – opportunity or clever disposal of offal?**

With skyrocketing prices for regular feed raw materials feedmillers and farmers more and more become interested in alternative ingredients. In The Netherlands a lively industry was developed in valuing by-products from the food industry. Recently new nutritional tables became available for calculating the right feed formulas that include these wet feeds.

**Pet food****23 Functional foods for pets gain popularity**

Frost & Sullivan carried out a research in the EU-27 on the use of prebiotics in pet food. With the change in population demographics, the lifestyles of many people have contributed to the humanisation of companion animals, and there is a growing realisation that pets are treated as additional family members. As people become more aware of functional foods for the benefit of their own health, they are increasingly likely to use these products in their pets.

**Interview****28 Feed scares; how to prepare for the unexpected?**

The feed sector has gone through some serious scares lately; from dioxin to melamine and from salmonella to aflatoxins. These scares not only cost money, they also damage the image of the sector. What can be done to prevent it? Feed Tech has put this question to Wilco de Haan, Director Liability at Marsh, eminent insurance broker and risk management consultant.

**Business briefs/Product news****32 Latest business developments, product news and people movements**

Feed Tech is published by Reed Business bv, International Agri- & Horticulture, the Netherlands

Copyright © 2008  
All rights reserved  
ISSN: 1387-1978  
Circulation: 15,200

**Publisher**  
Rex Bierlaagh Tel: +31 31 434 9550

**Editor**  
Dick Ziggers Tel: +31 31 434 9125,  
E-mail: dick.ziggers@reedbusiness.nl

**Co editor:**  
Emmy Koeleman Tel: +31 31 434 9574  
**Web editor:**  
Allison Winstanley Tel: +31 31 434 9146  
**Sub editor:**  
Marjorie O'Connell Tel: +31 31 434 9391

**Art director**  
Cees van Groos

**Commercial manager**  
Andrea Raemaekers Tel: +31 31 435 8111

**Advertising**  
Miguel Mendes de Leon, Marjolein Lacet,  
Antoinette Kwakman, Robert Molenaar, Oscar van  
der Noll and Dhierinder Ramcharan  
Tel: +31 31 434 9562

Media file available upon request  
Email: salesint@reedbusiness.nl

**Production manager**  
Richard Kok Tel: +31 31 434 9772

**Marketing manager readers market**  
Erik Willems Tel: +31 31 434 9147

**Subscriptions**  
Tel: +31 314 349 170  
Subscription rate: 1 issue €27, 1 year €215

Subscriptions can start at any chosen time. Subscribe via website or directly at our Customer Service. Subscriptions will automatically continue unless Customer Service receives a cancellation notification at least 30 days prior to subscription end date. Notification of subscription termination can be done either in writing or per e-mail: Customerservice@reedbusiness.nl For information regarding running subscriptions, your can also contact Customer Service.

**Banker**  
Citibank Philadelphia  
Lock Box 7107  
PO Box 7247-7101  
Philadelphia PA 19170-7101 USA  
Account no 4067-7681

**Address**  
Reed Business bv, P.O. Box 4, 7000 BA Doetinchem,  
the Netherlands Tel: +31 314 349 562 Fax: +31  
314 340 515 www.AgriWorld.nl int@reedbusiness.nl

Printed in Singapore in co-operation with Magnum  
Printing Company Private Limited.

The publisher and authors declare that they have compiled this document carefully and to the best of their knowledge. However, no warranty or representation is made to the accuracy or completeness of the information contained in this document. The publisher and authors assume no liability whatsoever for any damage resulting from the use of this document or its contents. Reed Business bv, the publisher of Feed Tech, collects data on subscribers to this magazine and when you contact our organisation. This data may be used for direct marketing purposes for Reed Business bv, its ventures and carefully screened companies. You can block your data for use in direct marketing by writing to Reed Business bv, attn Address processing, P.O. Box 8080, 7000 AV Doetinchem, the Netherlands.

## TABLE OF CONTENTS

IN THIS ISSUE ..... 1108

### JAVMA NEWS



Beef recall sparks  
hearings, tightened  
inspections

page 1112



AVMA testifies against  
keeping primates as pets

page 1116



Saving the sight  
of service dogs

page 1121

Members' e-mail addresses vital to communication, protected by AVMA .....	1115
Dogfighting now a felony in all 50 states .....	1120
Team studies disease outbreak among pigs in China .....	1122
Survey identifies patterns in veterinarians' Internet use .....	1123
Western conference marks 80th annual meeting .....	1124
Obituaries .....	1126

### VIEWS

**Letters to the Editor** ..... 1131

Thoughts on protecting veterinary responders following natural disasters

More on pet insurance and the veterinary profession

Questions data in study on hemangiosarcomas in dogs

Options for treatment of cecocolic intussusception in horses

### VETERINARY MEDICINE TODAY

#### What Is Your Diagnosis?

*Meredyth L. Jones and Robert N. Streeter* ..... 1137

**Diagnostic Imaging in Veterinary Dental Practice** ..... 1139

*Milinda J. Lommer*

#### Reference Point

Use of systemically administered lidocaine in horses with gastrointestinal tract disease ..... 1144

*Vanessa L. Cook and Anthony T. Blikslager*



## SCIENTIFIC REPORTS

### **Small Animals**

Seroprevalences of feline leukemia virus and feline immunodeficiency virus in cats with abscesses or bite wounds and rate of veterinarian compliance with current guidelines for retrovirus testing ..... 1152  
*Carrie E. Goldkamp, Julie K. Levy, Charlotte H. Edinboro, and Jessica L. Lachtara*

Attitudes toward and perceptions of free-roaming cats among individuals living in Ohio ..... 1159  
*Linda K. Lord*

Suspected albuterol toxicosis in a dog ..... 1168  
*Jennifer L. McCown, Elizabeth S. Lechner, and Kirsten L. Cooke*

Acquired pulmonary artery stenosis in four dogs ..... 1172  
*Brian A. Scansen, Karsten E. Schober, John D. Bonagura, and Daniel D. Smeak*

Goitrous hypothyroidism associated with treatment with trimethoprim-sulfamethoxazole in a young dog ..... 1181  
*Davis M. Seelig, Jacqueline C. Whittemore, Michael R. Lappin, Alan M. Myers, and Paul R. Avery*

Results of excision of thymoma in cats and dogs: 20 cases (1984–2005) ..... 1186  
*Julia C. Zitz, Stephen J. Birchard, Guillermo C. Couto, Valerie F. Samii, Steven E. Weisbrode, and Gregory S. Young*

Analysis of prognostic factors associated with injection-site sarcomas in cats: 57 cases (2001–2007) ..... 1193  
*Giorgio Romanelli, Laura Marconato, Daniela Olivero, Federico Massari, and Eric Zini*

Lomustine for treatment of mast cell tumors in cats: 38 cases (1999–2005) ..... 1200  
*Kenneth M. Rassnick, Laurel E. Williams, Orna Kristal, Renée Al-Sarraf, Jennifer L. Baez, Courtney H. Zwahlen, and Gillian Dank*

### **Camelids**

Hematuria and transitional cell papilloma of the renal pelvis treated via unilateral nephrectomy in an alpaca ..... 1206  
*Christian Gerspach, Bruce L. Hull, D. Michael Rings, Dennis J. Chew, Gillian L. Beamer, John A. E. Hubbell, and Jeffrey Lakritz*

### **Correction**

Prevalence of hemangiosarcoma in anemic dogs with a splenic mass and hemoperitoneum requiring a transfusion: 71 cases (2003–2005) ..... 1158

### **Selected abstracts for JAVMA readers from the American Journal of Veterinary Research**

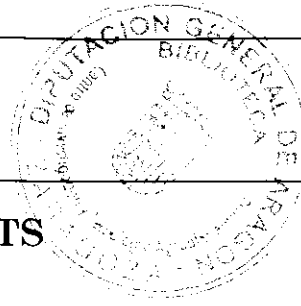
Effect of body position on intraocular pressure in dogs without glaucoma ..... 1171

Determination of reference intervals for plasma biochemical values in clinically normal adult domestic shorthair cats by use of a dry-slide biochemical analyzer ..... 1185

**American Journal of Veterinary Research Table of Contents** ..... 1210

## ANNOUNCEMENTS

Meetings and CE Offerings—Log on to [www.avma.org](http://www.avma.org)  
 Examinations ..... 1212  
 Applications for Membership ..... 1212  
 Educational Opportunities ..... 1214  
 Classified Advertisements ..... 1217  
 Instructions for Authors—Log on to JAVMA at [avmajournals.avma.org](http://avmajournals.avma.org)


**CONTENTS**
**LETTERS TO THE EDITOR**

- Editorial: Public discourse concerning swine genetics papers. *Lawrence P. Reynolds*..... 1033
- Editorial: Dealing with charges of scientific misconduct. *Michael Galyean*..... 1035
- Letter to the editor. *Rodger Johnson*..... 1036

**ANIMAL GENETICS**
**Molecular Genetics**

- Effects of the myostatin F94L substitution on beef traits. *A. K. Esmailizadeh, C. D. K. Bottema, G. S. Sellick, A. P. Verbyla, C. A. Morris, N. G. Cullen, and W. S. Pitchford*..... 1038

**Quantitative Genetics**

- Estimation of accuracy and bias in genetic evaluations with genetic groups using sampling. *J. M. Hickey, M. G. Keane, D. A. Kenny, A. R. Cromie, H. A. Mulder, and R. F. Veerkamp*..... 1047
- Evaluation of methods for computing approximate accuracies of predicted breeding values in maternal random regression models for growth traits in beef cattle. *J. P. Sánchez, I. Misztal, and J. K. Bertrand*..... 1057
- Genetic parameters and predicted selection results for maternal traits related to lactation efficiency in sows. *R. Bergsma, E. Kanis, M. W. A. Verstegen, and E. F. Knol*..... 1067
- Estimation of maternal variance components considering cow-calf contacts under extensive pastoral systems. *K. C. Prayaga, J. M. Henshall, D. L. Swain, and A. R. Gilmour*..... 1081
- Combined detection and introgression of quantitative trait loci underlying desirable traits. *M. H. Yazdi, A. K. Sonesson, J. A. Woolliams, and T. H. E. Meuwissen*..... 1089

**ANIMAL GROWTH, PHYSIOLOGY, AND REPRODUCTION**
**Growth and Developmental Biology**

- Optimum duration of performance tests for evaluating growing pigs for growth and feed efficiency traits. *P. F. Arthur, I. M. Barchia, and L. R. Giles*..... 1096

**Physiology, Endocrinology, and Reproduction**

- Trichostatin A and nuclear reprogramming of cloned rabbit embryos. *L. H. Shi, J. S. Ai, Y. C. OuYang, J. C. Huang, Z. L. Lei, Q. Wang, S. Yin, Z. M. Han, Q. Y. Sun, and D. Y. Chen*..... 1106
- Circulating fatty acid profiles in response to three levels of dietary omega-3 fatty acid supplementation in horses. *S. S. King, A. A. AbuGhazaleh, S. K. Webel, and K. L. Jones*..... 1114
- Dietary restriction reduces the rate of estradiol clearance in sheep (*Ovis aries*). *B. J. Renquist, T. E. Adams, B. M. Adams, and C. C. Calvert*..... 1124
- Effect of continuous milking and prostaglandin E<sub>2</sub> on milk production and mammary epithelial cell turnover, ultrastructure, and gene expression. *E. L. Annen, C. M. Stiening, B. A. Crooker, A. C. Fitzgerald, and R. J. Collier*..... 1132

**ANIMAL NUTRITION**
**Nonruminant Nutrition**

- The influence of diets supplemented with conjugated linoleic acid, selenium, and vitamin E, with or without animal protein, on the composition of pork from female pigs. *P. C. H. Morel, J. A. M. Janz, M. Zou, R. W. Purchas, W. H. Hendriks, and B. H. P. Wilkinson*..... 1145

Evaluation of a dynamic in vitro model to simulate the porcine ileal digestion of diets differing in carbohydrate composition. *J. P. Meunier, E. G. Manzanilla, M. Anguita, S. Denis, J. F. Pérez, J. Gasa, J.-M. Cardot, F. Garcia, X. Moll, and M. Alric* ..... 1156

**Ruminant Nutrition**

Effects of yeast culture and fibrolytic enzyme supplementation on in vitro fermentation characteristics of low-quality cereal straws. *S. X. Tang, G. O. Tayo, Z. L. Tan, Z. H. Sun, L. X. Shen, C. S. Zhou, W. J. Xiao, G. P. Ren, X. F. Han, and S. B. Shen* ..... 1164

Effects of dietary nonprotein nitrogen on performance, digestibility, ruminal characteristics, and microbial efficiency in crossbred steers. *F. H. M. Chizzotti, O. G. Pereira, L. O. Tedeschi, S. C. Valadares Filho, M. L. Chizzotti, M. I. Leão, and D. H. Pereira*..... 1173

Effects of feeding wet corn distillers grains with solubles with or without monensin and tylosin on the prevalence and antimicrobial susceptibilities of fecal foodborne pathogenic and commensal bacteria in feedlot cattle. *M. E. Jacob, J. T. Fox, S. K. Narayanan, J. S. Drouillard, D. G. Renter, and T. G. Nagaraja*..... 1182

**ANIMAL PRODUCTS**

**Meat Science and Muscle Biology**

Effects of packaging atmospheres on beef instrumental tenderness, fresh color stability, and internal cooked color. *J. P. Grobbel, M. E. Dikeman, M. C. Hunt, and G. A. Milliken* ..... 1191

Effects of aging on beef chuck and loin muscles enhanced with ammonium hydroxide and salt. *A. E. Hamling, B. E. Jenschke, and C. R. Calkins*..... 1200

Physicochemical properties of meat of Italian Heavy Draft horses slaughtered at the age of eleven months. *A. Tateo, P. De Palo, E. Ceci, and P. Centoducati* ..... 1205

**ANIMAL PRODUCTION**

**Behavior**

Effect of neck injection and handler visibility on behavioral reactivity of beef steers. *R. Müller, K. S. Schwartzkopf-Genswein, M. A. Shah, and M. A. G. von Keyserlingk* ..... 1215

**Feedstuff Evaluation**

BOARD-INVITED REVIEW: Use of distillers by-products in the beef cattle feeding industry. *T. J. Klopfenstein, G. E. Erickson, and V. R. Bremer* ..... 1223

**Health and Well-Being**

Lairage during transport of eighteen-kilogram pigs has an impact on innate immunity and commensal bacteria diversity in the intestines. *J. L. Williams, J. E. Minton, J. A. Patterson, J. Marchant Forde, and S. D. Eicher*..... 1232

**Management**

Technical Note: Effects of tethering on herbage selection, intake and digestibility, grazing behavior, and energy expenditure by Boer × Spanish goats grazing high-quality herbage. *A. K. Patra, R. Puchala, G. Detweiler, L. J. Dawson, T. Sahlu, and A. L. Goetsch*..... 1245

**Pharmacology and Toxicology**

Effects of selenium supply and dietary restriction on maternal and fetal metabolic hormones in pregnant ewe lambs. *M. A. Ward, T. L. Neville, J. J. Reed, J. B. Taylor, D. M. Hallford, S. A. Soto-Navarro, K. A. Vonnahme, D. A. Redmer, L. P. Reynolds, and J. S. Caton*..... 1254

**Rangeland, Pasture, and Forage Utilization**

Effect of fat supplementation and wheat pasture maturity on forage intake and digestion characteristics of steers grazing wheat pasture. *D. A. Chabot, C. D. Chabot, L. K. Conway, and S. A. Soto-Navarro* ..... 1263

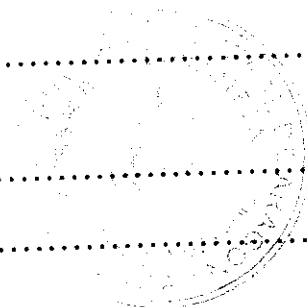
Comparison of low-moisture blocks and salt for manipulating grazing patterns of beef cows. *D. W. Bailey, H. C. VanWagoner, R. Weinmeister, and D. Jensen* ..... 1271

<b>Errata</b>	
Erratum .....	1278
Erratum .....	1279
<b>Announcements and Society Business</b>	
News and Notes .....	1280
Placement .....	1281

## CONTENTS

INTERPRETIVE SUMMARIES.....	6	90
GENERAL INTEREST:		
Administrative Information .....	14	
NEWS AND ANNOUNCEMENTS.....	15	98
DAIRY FOODS:		
Solvent Type Affects the Number, Distribution, and Relative Quantities of Volatile Compounds Found in Sweet Whey Powder <b>R. A. Prosski, M. R. Etzel, and S. A. Rankin</b> .....	523	10
Binding of Aflatoxin M <sub>1</sub> to Different Protein Fractions in Ovine and Caprine Milk <b>A. Barbiroli, F. Bonomi, S. Benedetti, S. Mannino, L. Monti, T. Cattaneo, and S. Iametti</b> .....	532	13
Bovine $\alpha$ -Lactalbumin Stimulates Mucus Metabolism in Gastric Mucosa <b>Y. Ushida, Y. Shimokawa, T. Toida, H. Matsui, and M. Takase</b> .....	541	13
Antioxidant Nature of Bovine Milk $\beta$ -Lactoglobulin <b>H. C. Liu, W. L. Chen, and S. J. T. Mao</b> .....	547	10
Study on the Influence of Pasture on Volatile Fraction of Ewes' Dairy Products by Solid-Phase Microextraction and Gas Chromatography- Mass Spectrometry <b>M. Povolo, G. Contarini, M. Mele, and P. Secchiari</b> .....	556	16
Dairy Powder Rehydration: Influence of Protein State, Incorporation Mode, and Agglomeration <b>C. Gaiani, P. Schuck, J. Scher, S. Desobry, and S. Banon</b> .....	570	17
Effect of $\beta$ -Lactoglobulin A and B Whey Protein Variants on the Rennet- Induced Gelation of Skim Milk Gels in a Model Reconstituted Skim Milk System <b>M. A. Meza-Nieto, B. Vallejo-Cordoba, A. F. González-Córdova, L. Félix, and F. M. Goycoolea</b> .....	582	6
Enzymatic Interesterification of Tripalmitin with Vegetable Oil Blends for Formulation of Caprine Milk Infant Formula Analogs <b>C. O. Maduko, C. C. Akoh, and Y. W. Park</b> .....	594	6
Lipolysis and Proteolysis of Modified and Producer Milks Used for Calibration of Mid-Infrared Milk Analyzers <b>K. E. Kaylegian, J. M. Lynch, J. R. Fleming, and D. M. Barbano</b> .....	602	8
Valuation of Milk Composition and Genotype in Cheddar Cheese Production Using an Optimization Model of Cheese and Whey Production <b>H. A. Johnson, L. Parvin, I. Garnett, E. J. DePeters, J. F. Medrano, and J. G. Fadel</b> .....	616	3
Effect of Somatic Cell Count on Prato Cheese Composition <b>G. Mazal, P. C. B. Vianna, M. V. Santos, and M. L. Gigante</b> .....	630	3

18 MAY 2008



**PHYSIOLOGY AND MANAGEMENT:**

Associations Among Body Condition Score, Body Weight, Somatic Cell Count, and Clinical Mastitis in Seasonally Calving Dairy Cattle <b>D. P. Berry, J. M. Lee, K. A. Macdonald, K. Stafford, L. Matthews, and J. R. Roche</b> .....	637
Relationships Among Milk Production, Energy Balance, Plasma Analytes, and Reproduction in Holstein-Friesian Cows <b>J. Patton, D. A. Kenny, S. McNamara, J. F. Mee, F. P. O'Mara, M. G. Diskin, and J. J. Murphy</b> .....	649
Production Effects of Pathogens Causing Bovine Leukosis, Bovine Viral Diarrhea, Paratuberculosis, and Neosporosis <b>A. Tiwari, J. A. VanLeeuwen, I. R. Dohoo, G. P. Keefe, J. P. Haddad, R. Tremblay, H. M. Scott, and T. Whiting</b> .....	659
Gait Pattern of Heifers Before and After Claw Trimming: A High-Speed Cinematographic Study on a Treadmill <b>S. W. Meyer, M. A. Weishaupt, and K. A. Nuss</b> .....	670
<i>Short Communication:</i> Ability of Cultured Mammary Epithelial Cells in a Bicameral System to Secrete Milk Fat <b>I. Ernens, R. Clegg, Y.-J. Schneider, and Y. Larondelle</b> .....	677
Incontinentia Lactis: Physiology and Anatomy Conducive to Milk Leakage in Dairy Cows <b>M. Rovai, M. T. Kollmann, and R. M. Bruckmaier</b> .....	682
Timed Artificial Insemination of Two Consecutive Services in Dairy Cows Using Prostaglandin F <sub>2α</sub> and Gonadotropin-Releasing Hormone <b>J. P. Meyer, R. P. Radcliff, M. L. Rhoads, J. F. Bader, C. N. Murphy, and M. C. Lucy</b> .....	691
Effect of Photoperiod in the Third Trimester of Gestation on Milk Production and Circulating Hormones in Dairy Goats <b>S. J. Mabjeesh, O. Gal-Garber, and A. Shamay</b> .....	699
Factors Affecting the Concentration of Sphingomyelin in Bovine Milk <b>E. L. F. Graves, A. D. Beaulieu, and J. K. Drackley</b> .....	706
The Milk Yield Response to Frequent Milking in Early Lactation of Dairy Cows Is Locally Regulated <b>E. H. Wall and T. B. McFadden</b> .....	716
Effects of a Supplement Containing <i>Trans</i> -10, <i>Cis</i> -12 Conjugated Linoleic Acid on Bioenergetic and Milk Production Parameters in Grazing Dairy Cows Offered Ad Libitum or Restricted Pasture <b>J. K. Kay, T. R. Mackle, D.E. Bauman, N. A. Thomson, and L. H. Baumgard</b> .....	721
Effects of Dietary Vitamin C on Neutrophil Function and Responses to Intramammary Infusion of Lipopolysaccharide in Periparturient Dairy Cows <b>W. P. Weiss and J. S. Hogan</b> .....	731
Expression and Localization of Extracellular Matrix-Degrading Proteinases and Their Inhibitors in the Bovine Mammary Gland During Development, Function, and Involution <b>A. Rabot, F. Sinowatz, B. Berisha, H. H. D. Meyer, and D. Schams</b> .....	740
Bovine Claw and Limb Disorders at Claw Trimming Related to Milk Yield <b>A. M. Sogstad, O. Østerås, T. Fjeldaas, and A. O. Refsdal</b> .....	749
Effect of an Intramammary Teat Seal and Dry Cow Antibiotic in Relation to Dry Period Length on Postpartum Mastitis <b>E. A. Berry and J. E. Hillerton</b> .....	760

<i>Streptococcus dysgalactiae</i> Isolates at Calving and Lactation Performance Within the Same Lactation <b>A. C. Whist, O. Østerås, and L. Sølvørød</b> .....	766
Parenteral Treatment of Clinical Mastitis with Tylosin Base or Penethamate Hydriodide in Dairy Cattle <b>S. McDougall, K. E. Agnew, R. Cursons, X. X. Hou, and C. R. W. Compton</b> .....	779
Influence of Estrus of Dairy Goats on Somatic Cell Count, Milk Traits, and Sex Steroid Receptors in the Mammary Gland <b>P. Moroni, G. Pisoni, G. Savoini, E. van Lier, S. Acuña, J. P. Damián, and A. Meikle</b> .....	790
<b>NUTRITION, FEEDING, AND CALVES:</b>	
Assessment of Ruminal Bacterial Populations and Protozoal Generation Time in Cows Fed Different Methionine Sources <b>S. K. R. Karnati, J. T. Sylvester, S. M. Nofstger, Z. Yu, N. R. St-Pierre, and J. L. Firkins</b> .....	798
Ruminal Degradability and Intestinal Digestibility of Protein and Amino Acids in Treated Soybean Meal Products <b>S. I. Borucki Castro, L. E. Phillip, H. Lapierre, P. W. Jardon, and R. Berthiaume</b> .....	810
Milk from Forage as Affected by Rumen Degradable Protein and Corn Grinding When Feeding Corn- and Alfalfa Silage-Based Diets <b>E. Charbonneau, P. Y. Chouinard, G. Allard, H. Lapierre, and D. Pellerin</b> .....	823
Effect of Heat and High-Pressure Treatments on Microbiological Quality and Immunoglobulin G Stability of Caprine Colostrum <b>A. J. Trujillo, N. Castro, J. M. Quevedo, A. Argüello, J. Capote, and B. Guamis</b> .....	833
Development of a Mechanistic Model to Represent the Dynamics of Liquid Flow Out of the Rumen and to Predict the Rate of Passage of Liquid in Dairy Cattle <b>S. Seo, C. Lanzas, L. O. Tedeschi, and D. G. Fox</b> .....	840
Ruminal Lipopolysaccharide Concentration and Inflammatory Response During Grain-Induced Subacute Ruminal Acidosis in Dairy Cows <b>G. N. Gozho, D. O. Krause, and J. C. Plaizier</b> .....	856
Measurement of Milk Intake in Suckling Llamas ( <i>Lama glama</i> ) Using Deuterium Oxide Dilution <b>A. Riek, M. Gerken, and E. Moors</b> .....	867
Pre- and Postweaning Performance of Holstein Female Calves Fed Milk Through Step-Down and Conventional Methods <b>M. A. Khan, H. J. Lee, W. S. Lee, H. S. Kim, S. B. Kim, K. S. Ki, J. K. Ha, H. G. Lee, and Y. J. Choi</b> .....	876
Effects of Essential Oils on Digestion, Ruminal Fermentation, Rumen Microbial Populations, Milk Production, and Milk Composition in Dairy Cows Fed Alfalfa Silage or Corn Silage <b>C. Benchaar, H. V. Petit, R. Berthiaume, D. R. Ouellet, J. Chiquette, and P. Y. Chouinard</b> .....	886
Effects of Two Different Feeding Strategies During Dry-off on Certain Health Aspects of Dairy Cows <b>M. O. Odensten, K. Holtenius, and K. Persson Waller</b> .....	898
Comparative Evaluation of Alternative Forages to Grass Silage in the Diet of Early Lactation Dairy Cows <b>F. Burke, J. J. Murphy, M. A. O'Donovan, F. P. O'Mara, S. Kavanagh, and F. J. Mulligan</b> .....	908
Occurrence of Selenoprotein Enzyme Activities and mRNA in Bovine Mammary Tissue <b>K. Bruzelius, T. Hoac, R. Sundler, G. Önning, and B. Åkesson</b> .....	918

Concentrations of Butyric Acid Bacteria Spores in Silage and Relationships with Aerobic Deterioration <b>M. M. M. Vissers, F. Driehuis, M. C. Te Giffel, P. De Jong, and J. M. G. Lankveld</b> .....	928
Effects of Prepartum Administration of a Monensin Controlled Release Capsule on Rumen pH, Feed Intake, and Milk Production of Transition Dairy Cows <b>A. M. Fairfield, J. C. Plaizier, T. F. Duffield, M. I. Lindinger, R. Bagg, P. Dick, and B. W. McBride</b> .....	937
Limit Feeding of Gravid Holstein Heifers: Effect on Growth, Manure Nutrient Excretion, and Subsequent Early Lactation Performance <b>P. C. Hoffman, C. R. Simson, and M. Wattiaux</b> .....	946
Isolation of Bovine Immunoglobulins Resistant to Peptic Digestion: New Perspectives in the Prevention of Failure in Passive Immunization of Neonatal Calves <b>A. C. R. C. Porto, L. L. Oliveira, L. C. Ferraz, L. E. S. Ferraz, S. M. O. Thomaz, J. C. Rosa, and M. C. Roque-Barreira</b> .....	955
The Effect of Solids Dilution Rate and Oil Source on <i>Trans</i> C18:1 and Conjugated Linoleic Acid Production by Ruminal Microbes in Continuous Culture <b>A. A. AbuGhazaleh and W. R. Buckles</b> .....	963
Effects of Dietary Cation-Anion Difference and Potassium to Sodium Ratio on Lactating Dairy Cows in Hot Weather <b>C. D. Wildman, J. W. West, and J. K. Bernard</b> .....	970
Manipulation of Soluble and Rumen-Undegradable Protein in Diets Fed to Postpubertal Dairy Heifers <b>G. I. Zanton, M. T. Gabler, and A. J. Heinrichs</b> .....	978
Effect of Varying Levels of Fatty Acids from Palm Oil on Feed Intake and Milk Production in Holstein Cows <b>S. A. Mosley, E. E. Mosley, B. Hatch, J. I. Szasz, A. Corato, N. Zacharias, D. Howes, and M. A. McGuire</b> .....	987
<i>Short Communication:</i> Identification of Diseased Calves by Use of Data from Automatic Milk Feeders <b>C. Svensson and M. B. Jensen</b> .....	994
Effectiveness of Oils Rich in Linoleic and Linolenic Acids to Enhance Conjugated Linoleic Acid in Milk from Dairy Cows <b>D. P. Bu, J. Q. Wang, T. R. Dhiman, and S. J. Liu</b> .....	998
<b>GENETICS AND BREEDING:</b>	
Selection on Yield and Fitness Traits When Culling Holsteins During the First Three Lactations <b>H. D. Norman, J. L. Hutchison, J. R. Wright, M. T. Kuhn, and T. J. Lawlor</b> .....	1008
<i>Short Communication:</i> Genetic Evaluation of Milking Speed for Brown Swiss Dairy Cattle in the United States <b>G. R. Wiggans, L. L. M. Thornton, R. R. Neitzel, and N. Gengler</b> .....	1021
Analysis of the Sheep MUC1 Gene: Structure of the Repetitive Region and Polymorphism <b>R. Rasero, L. Bianchi, E. Cauvin, S. Maione, S. Sartore, D. Soglia, and P. Sacchi</b> .....	1024
Association of Bovine Leukocyte Antigen (BoLA) DRB3.2 with Immune Response, Mastitis, and Production and Type Traits in Canadian Holsteins <b>R. Rupp, A. Hernandez, and B. A. Mallard</b> .....	1029



Goat Acetyl-Coenzyme A Carboxylase  $\alpha$ : Molecular Characterization,  
Polymorphism, and Association with Milk Traits  
**B. Badaoui, J. M. Serradilla, A. Tomàs, B. Urrutia, J. L. Ares, J. Carrizosa,  
A. Sánchez, J. Jordana, and M. Amills.....1039**

Exploring the Use of Random Regression Models with Legendre  
Polynomials to Analyze Measures of Volume of Ejaculate  
in Holstein Bulls  
**M. J. Carabaño, C. Díaz, C. Ugarte, and M. Serrano .....1044**

**OUR INDUSTRY TODAY:**

Bacterial Counts in Organic Materials Used as Free-Stall Bedding  
Following Treatment with a Commercial Conditioner  
**J. S. Hogan, S. L. Wolf, and C. S. Petersson-Wolfe.....1058**

The Effect of Formulation and Amount of Potassium Fertilizer  
on Macromineral Concentration and Cation-Anion Difference  
in Tall Fescue  
**M. L. Swift, S. Bittman, D. E. Hunt, and C. G. Kowalenko .....1063**

Voluntary Waiting Period Management Practices in Dairy Herds  
Participating in a Progeny Test Program  
**J. M. DeJarnette, C. G. Sattler, C. E. Marshall, and R. L. Nebel .....1073**

**NOTICE: Page Charges for Publication**

The page charge per printed page is \$85 for professional members and \$140 for nonmembers for papers published in *Journal of Dairy Science*

**Future Annual Meetings**  
**2007--July 8-12, San Antonio, TX**

# Journal of Dairy Science

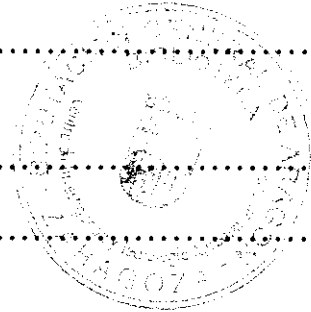
March 2007

Volume 90, Number 3

18 MAYO 2008

## CONTENTS

<b>INTERPRETIVE SUMMARIES</b> .....	5
<b>GENERAL INTEREST:</b>	
Administrative Information .....	12
<b>NEWS AND ANNOUNCEMENTS</b> .....	13
<b>DAIRY FOODS:</b>	
Effects of Ultra-High Pressure Homogenization on Microbial and Physicochemical Shelf Life of Milk <b>J. Pereda, V. Ferragut, J. M. Quevedo, B. Guamis, and A. J. Trujillo</b> .....	1081
Comparison of the Behavior of Two Nanofiltration Membranes for Sweet Whey Demineralization <b>B. Cuartas-Uribe, M. I. Alcaina-Miranda, E. Soriano-Costa, and A. Bes-Piá</b> .....	1094
Microbiology, Biochemistry, and Volatile Composition of Tulum Cheese Ripened in Goat's Skin or Plastic Bags <b>A. A. Hayaloglu, S. Cakmakci, E. Y. Brechany, K. C. Deegan, and P. L. H. McSweeney</b> .....	1102
Evaluating Mid-infrared Spectroscopy as a New Technique for Predicting Sensory Texture Attributes of Processed Cheese <b>C. C. Fagan, C. Everard, C. P. O'Donnell, G. Downey, E. M. Sheehan, C. M. Delahunty,         and D. J. O'Callaghan</b> .....	1122
<i>Short Communication: Carnobacterium maltaromaticum: The Only         Carnobacterium Species in French Ripened Soft Cheeses as Revealed         by Polymerase Chain Reaction Detection</i> <b>C. Cailliez-Grimal, H. C. Edima, A.-M. Revol-Junelles, and J.-B. Millière</b> .....	1133
<b>PHYSIOLOGY AND MANAGEMENT:</b>	
Synchronization of Estrus and Pregnancy Risk in Anestrous Dairy Cows After Treatment with a Progesterone-Releasing Intravaginal Device <b>R. B. Walsh, S. J. LeBlanc, T. D. Duffield, D. F. Kelton, J. S. Walton, and K. E. Leslie</b> .....	1139
Two- or Four-Hour Lying Deprivation on the Behavior of Lactating Dairy Cows <b>M. D. Cooper, D. R. Arney, and C. J. C. Phillips</b> .....	1149
Factors Affecting Milk Flow Traits in Dairy Cows: Results of a Field Study <b>A. Sandrucci, A. Tamburini, L. Bava, and M. Zucali</b> .....	1159
Effect of Monopropylene Glycol on Luteinizing Hormone, Metabolites, and Postpartum Anovulatory Intervals in Primiparous Dairy Cows <b>L. M. Chagas, P. J. S. Gore, S. Meier, K. A. Macdonald, and G. A. Verkerk</b> .....	1168
Phenotypic and Genetic Antibigram of Methicillin-Resistant Staphylococci Isolated from Bovine Mastitis in Korea <b>J.-S. Moon, A.-R. Lee, H.-M. Kang, E.-S. Lee, M.-N. Kim, Y. H. Paik, Y. H. Park,         Y.-S. Joo, and H. C. Koo</b> .....	1176



Shifts in Thioredoxin Reductase Activity and Oxidant Status  
in Mononuclear Cells Obtained from Transition Dairy Cattle  
**L. M. Sordillo, N. O'Boyle, J. C. Gandy, C. M. Corl, and E. Hamilton** .....1186

Evaluation of Progesterone Supplementation in a Prostaglandin  
F<sub>2α</sub>-Based Presynchronization Protocol Before Timed Insemination  
**R. C. Bicalho, S. H. Cheong, L. D. Warnick, and C. L. Guard** .....1193

Preventing Bovine Mastitis by a Postmilking Teat Disinfectant  
Containing Acidified Sodium Chlorite  
**J. E. Hillerton, J. Cooper, and J. Morelli** .....1201

Effects of Pasture on Lameness in Dairy Cows  
**O. Hernandez-Mendo, M. A. G. von Keyserlingk, D. M. Veira, and D. M. Weary**.....1209

*Short Communication: Cellular Localization of Haptoglobin mRNA  
in the Experimentally Infected Bovine Mammary Gland*  
**M. A. Thielen, M. Mielenz, S. Hiss, H. Zerbe, W. Petzl, H.-J. Schuberth,  
H.-M. Seyfert, and H. Sauerwein**.....1215

*Short Communication: Patterns of Fecal Shedding of Klebsiella  
by Dairy Cows*  
**M. A. Munoz and R. N. Zadoks** .....1220

Stochastic Modeling to Determine the Economic Effects of Blanket,  
Selective, and No Dry Cow Therapy  
**K. Huijps and H. Hogeveen** .....1225

Softer, Higher-Friction Flooring Improves Gait of Cows With and Without  
Sole Ulcers  
**F. C. Flower, A. M. de Passillé, D. M. Weary, D. J. Sanderson, and J. Rushen** .....1235

Role of Peripartum Dietary Propylene Glycol or Protected Fats  
on Metabolism and Early Postpartum Ovarian Follicles  
**U. Moallem, M. Katz, H. Lehrer, L. Livshitz, and S. Yakoby** .....1243

An Observational Analysis of Twin Births, Calf Sex Ratio, and Calf  
Mortality in Holstein Dairy Cattle  
**N. Silva del Río, S. Stewart, P. Rapnicki, Y. M. Chang, and P. M. Fricke** .....1255

Relationship of Thermal Status to Productivity in Heat-Stressed Dairy  
Cows Given Recombinant Bovine Somatotropin  
**R. S. Settivari, J. N. Spain, M. R. Ellersieck, J. C. Byatt, R. J. Collier, and D. E. Spiers**.....1265

Ovarian Traits After Gonadotropin-Releasing Hormone-Induced  
Ovulation and Subsequent Delay of Induced Luteolysis  
in an Ovsynch Protocol  
**J. S. Stevenson, M. A. Portaluppi, and D. E. Tenhouse**.....1281

Adherence and Efficacy of an External Teat Sealant to Prevent New  
Intramammary Infections in the Dry Period  
**G. H. Lim, K. E. Leslie, D. F. Kelton, T. F. Duffield, L. L. Timms, and R. T. Dingwell** .....1289

Herd Management Factors That Affect Duration and Variation  
of Adherence of an External Teat Sealant  
**G. H. Lim, D. F. Kelton, K. E. Leslie, L. L. Timms, C. Church, and R. T. Dingwell** .....1301

Multiple Correlation Analyses of Metabolic and Endocrine Profiles  
with Fertility in Primiparous and Multiparous Cows  
**D. C. Wathes, N. Bourne, Z. Cheng, G. E. Mann, V. J. Taylor, and M. P. Coffey** .....1310

**NUTRITION, FEEDING, AND CALVES:**

Changes in Net Portal Nutrient Flux in Response to Weaning Transition  
and Ionophore Supplementation in Dairy Calves  
**J. L. Klotz and R. N. Heitmann** .....1326

Effects of Low Rumen-Degradable Protein or Abomasal Fructan Infusion on Diet Digestibility and Urinary Nitrogen Excretion in Lactating Dairy Cows <b>T. F. Gressley and L. E. Armentano</b> .....	1340
Concentrate Supplementation Reduces Postprandial Plasma Ghrelin in Grazing Dairy Cows: A Possible Neuroendocrine Basis for Reduced Pasture Intake in Supplemented Cows <b>J. R. Roche, A. J. Sheahan, L. M. Chagas, and D. P. Berry</b> .....	1354
Metabolism of Silage Alcohols in Lactating Dairy Cows <b>N. B. Kristensen, A. Storm, B. M. L. Raun, B. A. Røjen, and D. L. Harmon</b> .....	1364
Effects of Feeding Formate-Treated Alfalfa Silage or Red Clover Silage on the Production of Lactating Dairy Cows <b>G. A. Broderick, A. F. Brito, and J. J. Olmos Colmenero</b> .....	1378
Effects of Feeding Formate-Treated Alfalfa Silage or Red Clover Silage on Omasal Nutrient Flow and Microbial Protein Synthesis in Lactating Dairy Cows <b>A. F. Brito, G. A. Broderick, J. J. Olmos Colmenero, and S. M. Reynal</b> .....	1392
Kinetics of Fatty Acid Biohydrogenation In Vitro <b>C. V. D. M. Ribeiro, M. L. Eastridge, J. L. Firkins, N. R. St-Pierre, and D. L. Palmquist</b> .....	1405
Metabolism and Udder Health at Dry-Off in Cows of Different Breeds and Production Levels <b>M. O. Odensten, B. Berglund, K. Persson Waller, and K. Holtenius</b> .....	1417
Effects of Dietary Protein and Starch on Intake, Milk Production, and Milk Fatty Acid Profiles of Dairy Cows Fed Corn Silage-Based Diets <b>A. R. J. Cabrita, R. J. B. Bessa, S. P. Alves, R. J. Dewhurst, and A. J. M. Fonseca</b> .....	1429
Use of Exogenous Fibrolytic Enzymes to Enhance In Vitro Fermentation of Alfalfa Hay and Corn Silage <b>J.-S. Eun, K. A. Beauchemin, and H. Schulze</b> .....	1440
Changes in Measures of Biotin Status Do Not Reflect Milk Yield Responses When Dairy Cows Are Fed Supplemental Biotin <b>G. Ferreira, W. P. Weiss, and L. B. Willett</b> .....	1452
Effect of Biotin on Activity and Gene Expression of Biotin-Dependent Carboxylases in the Liver of Dairy Cows <b>G. Ferreira and W. P. Weiss</b> .....	1460
Dietary Energy Source in Dairy Cows in Early Lactation: Energy Partitioning and Milk Composition <b>A. T. M. van Knegsel, H. van den Brand, J. Dijkstra, W. M. van Straalen, M. J. W. Heetkamp, S. Tamminga, and B. Kemp</b> .....	1467
Dietary Energy Source in Dairy Cows in Early Lactation: Metabolites and Metabolic Hormones <b>A. T. M. van Knegsel, H. van den Brand, E. A. M. Graat, J. Dijkstra, R. Jorritsma, E. Decuyper, S. Tamminga, and B. Kemp</b> .....	1477
Effects of Time at Suboptimal pH on Rumen Fermentation in a Dual- Flow Continuous Culture System <b>M. Cerrato-Sánchez, S. Calsamiglia, and A. Ferret</b> .....	1486
Economic Comparison of Divergent Strains of Holstein-Friesian Cows in Various Pasture-Based Production Systems <b>S. McCarthy, B. Horan, P. Dillon, P. O'Connor, M. Rath, and L. Shalloo</b> .....	1493
Feeding Rumen-Inert Fats Differing in Their Degree of Saturation Decreases Intake and Increases Plasma Concentrations of Gut Peptides in Lactating Dairy Cows <b>A. E. Relling and C. K. Reynolds</b> .....	1506

Chloride, Gluconate, Sulfate, and Short-Chain Fatty Acids Affect Calcium Flux Rates Across the Sheep Forestomach Epithelium  
**S. Leonhard-Marek, G. Becker, G. Breves, and B. Schröder** .....1516

**GENETICS AND BREEDING:**

The Relationship Between Body Energy Traits and Production and Fitness Traits in First-Lactation Dairy Cows  
**E. Wall, M. P. Coffey, and S. Brotherstone**.....1527

Environmental Sensitivity in New Zealand Dairy Cattle  
**J. R. Bryant, N. López-Villalobos, J. E. Pryce, C. W. Holmes, D. L. Johnson, and D. J. Garrick**.....1538

*Short Communication:* Effect of Environment on the Expression of Breed and Heterosis Effects for Production Traits  
**J. R. Bryant, N. López-Villalobos, J. E. Pryce, C. W. Holmes, D. L. Johnson, and D. J. Garrick**.....1548

Genetic Impacts of Using Female-Sorted Semen in Commercial and Nucleus Herds  
**G. Abdel-Azim and S. Schnell**.....1554

Genetic Parameters for a Multiple-Trait Multiple-Lactation Random Regression Test-Day Model in Italian Holsteins  
**B. L. Muir, G. Kistemaker, J. Jamrozik, and F. Canavesi**.....1564

**OUR INDUSTRY TODAY:**

Performance and Welfare of Dairy Cows in an Alternative Housing System in Minnesota  
**A. E. Barberg, M. I. Endres, J. A. Salfer, and J. K. Reneau** .....1575

A Total Merit Selection Index for Ontario Organic Dairy Farmers  
**P. Rozzi, F. Miglior, and K. J. Hand** .....1584

Voluntary Waiting Period and Adoption of Synchronized Breeding in Dairy Herd Improvement Herds  
**R. H. Miller, H. D. Norman, M. T. Kuhn, J. S. Clay, and J. L. Hutchison** .....1594

**NOTICE: Page Charges for Publication**

The page charge per printed page is \$85 for professional members and \$140 for nonmembers for papers published in *Journal of Dairy Science*

**Future Annual Meetings**  
2007–July 8–12, San Antonio, TX

## CONTENTS

<b>INTERPRETIVE SUMMARIES</b> .....	5
<b>GENERAL INTEREST:</b>	
Administrative Information .....	11
<b>NEWS AND ANNOUNCEMENTS</b> .....	12
<i>Journal of Dairy Science</i> 2006 Editorial Report	
Gary W. Rogers, Editor-in-Chief .....	1607
<b>INVITED REVIEW:</b>	
<i>Invited Review: Sensory and Mechanical Properties of Cheese Texture</i>	
E. A. Foegeding and M. A. Drake .....	1611
<b>DAIRY FOODS:</b>	
Effect of Natural Cheese Characteristics on Process Cheese Properties	
R. Kapoor, L. E. Metzger, A. C. Biswas, and K. Muthukummarappan .....	1625
Composition, Physiochemical Properties, Nitrogen Fraction Distribution,	
and Amino Acid Profile of Donkey Milk	
H. Y. Guo, K. Pang, X. Y. Zhang, L. Zhao, S. W. Chen, M. L. Dong, and F. Z. Ren.....	1635
Effect of Trisodium Citrate on Rheological and Physical Properties	
and Microstructure of Yogurt	
T. Ozcan-Yilsay, W.-J. Lee, D. Horne, and J. A. Lucey.....	1644
Biofilm Ecology of Wooden Shelves Used in Ripening the French Raw	
Milk Smear Cheese Reblochon de Savoie	
C. Mariani, R. Briandet, J.-F. Chamba, E. Notz, A. Carnet-Pantiez, R. N. Eyoug,	
and N. Oulahal .....	1653
Filtration of Milk Fat Globule Membrane Fragments from Acid	
Buttermilk Cheese Whey	
R. Rombaut, V. Dejonckheere, and K. Dewettinck .....	1662
<b>PHYSIOLOGY AND MANAGEMENT:</b>	
The Effect of Heat Stress and Lameness on Time Budgets of Lactating	
Dairy Cows	
N. B. Cook, R. L. Mentink, T. B. Bennett, and K. Burgi .....	1674
Role of Leptin on Growth Hormone and Prolactin Secretion by Bovine	
Pituitary Explants	
P. A. Accorsi, A. Munno, M. Gamberoni, R. Viggiani, M. De Ambrogi, C. Tamanini,	
and E. Seren .....	1683
Milking Cows Once Daily Influences Behavior and Udder Firmness	
at Peak and Mid Lactation	
C. B. Tucker, D. E. Dalley, J.-L. K. Burke, and D. A. Clark.....	1692
The Effect of Season on Somatic Cell Count and the Incidence	
of Clinical Mastitis	
R. G. M. Olde Riekerink, H. W. Barkema, and H. Stryhn.....	1704



Antibiogram and Coagulase Diversity in Staphylococcal Enterotoxin-Producing <i>Staphylococcus aureus</i> from Bovine Mastitis <b>J. S. Moon, A. R. Lee, H. M. Kang, E. S. Lee, Y. S. Joo, Y. H. Park, M. N. Kim, and H. C. Koo</b> .....	1716
Short Communication: Effect of Vacuum and Ratio on the Performance of a Monoblock Silicone Milking Liner <b>S. B. Spencer, J.-W. Shin, G. W. Rogers, and J. B. Cooper</b> .....	1725
Effects of Increasing Milking Frequency During the Last 28 Days of Gestation on Milk Production, Dry Matter Intake, and Energy Balance in Dairy Cows <b>R. R. Rastani, N. Silva del Rio, T. F. Gressley, G. E. Dahl, and R. R. Grummer</b> .....	1729
Plasma Paraoxonase, Health, Inflammatory Conditions, and Liver Function in Transition Dairy Cows <b>M. Bionaz, E. Trevisi, L. Calamari, F. Librandi, A. Ferrari, and G. Bertoni</b> .....	1740
Impacts of Dystocia on Health and Survival of Dairy Calves <b>J. E. Lombard, F. B. Garry, S. M. Tomlinson, and L. P. Garber</b> .....	1751
Screening for Subclinical Ketosis in Dairy Cattle by Fourier Transform Infrared Spectrometry <b>A. P. W. de Roos, H. J. C. M. van den Bijgaart, J. Hørlyk, and G. de Jong</b> .....	1761
A Study of the Knowledge, Attitudes, and Behaviors of French Dairy Farmers Toward the Farm Register <b>A. R. Dernburg, J. Fabre, S. Philippe, P. Sulpice, and D. Calavas</b> .....	1767
<b>NUTRITION, FEEDING, AND CALVES:</b>	
Apparent Recovery of Duodenal Odd- and Branched-Chain Fatty Acids in Milk of Dairy Cows <b>R. J. Dewhurst, J. M. Moorby, B. Vlaeminck, and V. Fievez</b> .....	1775
Long-Term Effects of Feeding Monensin on Methane Production in Lactating Dairy Cows <b>N. E. Odongo, R. Bagg, G. Vessie, P. Dick, M. M. Or-Rashid, S. E. Hook, J. T. Gray, E. Kebreab, J. France, and B. W. McBride</b> .....	1781
Effect of Partial Replacement of Forage Neutral Detergent Fiber with By-Product Neutral Detergent Fiber in Close-Up Diets on Periparturient Performance of Dairy Cows <b>H. M. Dann, M. P. Carter, K. W. Cotanch, C. S. Ballard, T. Takano, and R. J. Grant</b> .....	1789
Effect of Direct-Fed Microbials on Performance, Diet Digestibility, and Rumen Characteristics of Holstein Dairy Cows <b>M. L. Raeth-Knight, J. G. Linn, and H. G. Jung</b> .....	1802
Phlorizin Induces Lipolysis and Alters Meal Patterns in Both Early- and Late-Lactation Dairy Cows <b>B. J. Bradford and M. S. Allen</b> .....	1810
Effects of Different Protein Supplements on Milk Production and Nutrient Utilization in Lactating Dairy Cows <b>A. F. Brito and G. A. Broderick</b> .....	1816
Effects of Different Protein Supplements on Omasal Nutrient Flow and Microbial Protein Synthesis in Lactating Dairy Cows <b>A. F. Brito, G. A. Broderick, and S. M. Reynal</b> .....	1828
Effect of Dietary Cation-Anion Difference and Dietary Crude Protein on Performance of Lactating Dairy Cows During Hot Weather <b>C. D. Wildman, J. W. West, and J. K. Bernard</b> .....	1842

Effect of Supplementing Myristic Acid in Dairy Cow Rations on Ruminal Methanogenesis and Fatty Acid Profile in Milk  
**N. E. Odongo, M. M. Or-Rashid, E. Kebreab, J. France, and B. W. McBride** .....1851

Influence of Holstein-Friesian Strain and Feed System on Body Weight and Body Condition Score Lactation Profiles  
**S. McCarthy, D. P. Berry, P. Dillon, M. Rath, and B. Horan** .....1859

Effect of Monensin Delivery Method on Dry Matter Intake, Body Condition Score, and Metabolic Parameters in Transition Dairy Cows  
**C. S. Petersson-Wolfe, K. E. Leslie, T. Osborne, B. W. McBride, R. Bagg, G. Vessie, P. Dick, and T. F. Duffield**.....1870

Effect of Cobalt Supplementation During Late Gestation and Early Lactation on Milk and Serum Measures  
**R. L. Kincaid and M. T. Socha** .....1880

Omasal Flow of Soluble Proteins, Peptides, and Free Amino Acids in Dairy Cows Fed Diets Supplemented with Proteins of Varying Ruminal Degradabilities  
**S. M. Reynal, I. R. Ipharraguerre, M. Liñeiro, A. F. Brito, G. A. Broderick, and J. H. Clark** .....1887

A Comparison of Sampling Sites, Digesta and Microbial Markers, and Microbial References for Assessing the Postruminal Supply of Nutrients in Dairy Cows  
**I. R. Ipharraguerre, S. M. Reynal, M. Liñeiro, G. A. Broderick, and J. H. Clark** .....1904

Study of Immune Cells Involved in the Antitumor Effect of Kefir in a Murine Breast Cancer Model  
**A. de Moreno de LeBlanc, C. Matar, E. Farnworth, and G. Perdigón**.....1920

Effects of Varying Dietary Forage Particle Size in Two Concentrate Levels on Chewing Activity, Ruminal Mat Characteristics, and Passage in Dairy Cows  
**Q. Zebeli, M. Tafaj, I. Weber, J. Dijkstra, H. Steingass, and W. Drochner** .....1929

**GENETICS AND BREEDING:**

*Short Communication:* Identification of Allelic Variation at the Bovine *DRA* Locus by Polymerase Chain Reaction-Single Strand Conformational Polymorphism  
**H. Zhou, J. G. H. Hickford, Q. Fang, and S. O. Byun** .....1943

Temperature-Humidity Indices as Indicators of Milk Production Losses due to Heat Stress  
**J. Bohmanova, I. Misztal, and J. B. Cole** .....1947

*Short Communication:* Association Analysis of Microsatellites and *Mycobacterium avium* Subspecies *paratuberculosis* Antibody Response in German Holsteins  
**M. Hinger, H. Brandt, S. Horner, and G. Erhardt** .....1957

Effect of  $\kappa$ -Casein Polymorphism on Milk Composition in the Orobica Goat  
**F. Chiatti, S. Chessa, P. Bolla, G. Cigalino, A. Caroli, and G. Pagnacco** .....1962

Application of Controlling Instruments for Improvements in Cow Sire Selection  
**S. König, S. Lessner, and H. Simianer** .....1967

Genetic Parameters for Milk Urea Nitrogen in Relation to Milk Production Traits  
**W. M. Stoop, H. Bovenhuis, and J. A. M. van Arendonk**.....1981



Genetic Analysis of the Twenty-One-Day Pregnancy Rate in US Holsteins  
Using an Ordinal Censored Threshold Model with Unknown Voluntary  
Waiting Period  
**Y. M. Chang, O. González-Recio, K. A. Weigel, and P. M. Fricke**.....1987

Genetic Parameters for Milk Somatic Cell Score and Relationships  
with Production Traits in Primiparous Dairy Sheep  
**V. Riggio, R. Finocchiaro, J. B. C. H. M. van Kaam, B. Portolano, and H. Bovenhuis**.....1998

Comparing Local and Commercial Breeds on Functional Traits  
and Profitability: The Case of Reggiana Dairy Cattle  
**G. Gandini, C. Maltecca, F. Pizzi, A. Bagnato, and R. Rizzi**.....2004

Analysis of Fertility and Dystocia in Holsteins Using Recursive Models  
to Handle Censored and Categorical Data  
**E. López de Maturana, A. Legarra, L. Varona, and E. Ugarte**.....2012

*Short Communication:* Modification of Genetic Evaluation of Herd Life  
from a Three-Trait to a Five-Trait Model in Canadian Dairy Cattle  
**A. Sewalem, F. Miglior, G. J. Kistemaker, P. Sullivan, G. Huapaya,  
and B. J. Van Doormaal**.....2025

**OUR INDUSTRY TODAY:**

Survey of Salty and Sweet Whey Composition from Various Cheese  
Plants in Wisconsin  
**K. M. Blaschek, W. L. Wendorff, and S. A. Rankin**.....2029

Effect of Spring Grazing Date and Stocking Rate on Sward  
Characteristics and Dairy Cow Production During Midlactation  
**E. Kennedy, M. O'Donovan, J. P. Murphy, L. Delaby, and F. P. O'Mara**.....2035

Large-Scale Dairy Operations: Assessing Concerns of Neighbors About  
Quality-of-Life Issues  
**H. D. Schmalzried and L. F. Fallon Jr.**.....2047

An Evaluation of Dairy Producer Emergency Preparedness and Farm  
Security Education  
**D. A. Moore and M. Payne**.....2052

Direct-Fed Microbial Supplementation and Health and Performance  
of Pre- and Postpartum Dairy Cattle: A Field Trial  
**G. R. Oetzel, K. M. Emery, W. P. Kautz, and J. E. Nocek**.....2058

Dry Period Length in US Jerseys: Characterization and Effects  
on Performance  
**M. T. Kuhn, J. L. Hutchison, and H. D. Norman**.....2069

Erratum.....2082

**NOTICE: Page Charges for Publication**

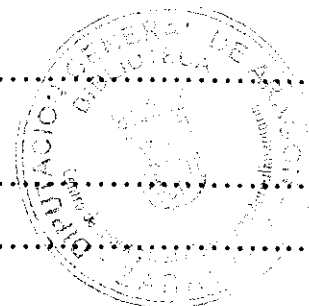
The page charge per printed page is \$85 for professional members and \$140 for nonmembers for papers published in *Journal of Dairy Science*

**Future Annual Meetings**  
2007–July 8–12, San Antonio, TX

MAYO 2008

## CONTENTS

<b>INTERPRETIVE SUMMARIES</b> .....	5
<b>GENERAL INTEREST:</b>	
Administrative Information .....	12
<b>NEWS AND ANNOUNCEMENTS</b> .....	13
<b>DAIRY FOODS:</b>	
<i>Hot Topic:</i> Fatty Acid and Conjugated Linoleic Acid (CLA) Isomer Composition of Commercial CLA-Fortified Dairy Products: Evaluation After Processing and Storage <b>L. M. Rodríguez-Alcalá and J. Fontecha</b> .....	2083
Identification of the Characteristics That Drive Consumer Liking of Butter <b>A. J. Krause, K. Lopetcharat, and M. A. Drake</b> .....	2091
Proteolysis in Mozzarella Cheeses Manufactured by Different Industrial Processes <b>L. Costabel, M. S. Pauletti, and E. Hynes</b> .....	2103
Effects of High Pressure on Proteolytic Enzymes in Cheese: Relationship with the Proteolysis of Ewe Milk Cheese <b>B. Juan, V. Ferragut, M. Buffa, B. Guamis, and A. J. Trujillo</b> .....	2113
Innovative Active Packaging Systems to Prolong the Shelf Life of Mozzarella Cheese <b>A. Conte, C. Scrocco, M. Sinigaglia, and M. A. Del Nobile</b> .....	2126
Microfiltration of Buttermilk and Washed Cream Buttermilk for Concentration of Milk Fat Globule Membrane Components <b>P. Morin, M. Britten, R. Jiménez-Flores, and Y. Pouliot</b> .....	2132
Use of Whey Permeate for Cultivating <i>Ganoderma lucidum</i> Mycelia <b>M. Song, N. Kim, S. Lee, and S. Hwang</b> .....	2141
Enzymatic Production of Infant Milk Fat Analogs Containing Palmitic Acid: Optimization of Reactions by Response Surface Methodology <b>C. O. Maduko, C. C. Akoh, and Y. W. Park</b> .....	2147
Influence of Calcium Salt Supplementation on Calcium Equilibrium in Skim Milk During pH Cycle <b>L. S. Canabady-Rochelle, C. Sanchez, M. Mellema, A. Bot, S. Desobry, and S. Banon</b> .....	2155
Factors Regulating Cheese Shreddability <b>J. L. Childs, C. R. Daubert, L. Stefanski, and E. A. Foegeding</b> .....	2163
An Economic Evaluation of Freeze-Dried Kefir Starter Culture Production Using Whey <b>Y. Kourkoutas, V. Sipsas, G. Papavasiliou, and A. A. Koutinas</b> .....	2175
Alternatives for Improving Physical, Chemical, and Sensory Characteristics of Goat Cheeses: The Use of Arid-Land Forages in the Diet <b>S. Álvarez, M. Fresno, P. Méndez, N. Castro, J. R. Fernández,         and M. R. Sanz Sampelayo</b> .....	218



Front-Face Fluorescence Measurement of Photosensitizers and Lipid Oxidation Products During the Photooxidation of Butter  
**A. Veberg, E. Olsen, A. N. Nilsen, and J. P. Wold**.....2189

Stability of the Biodiversity of the Surface Consortia of Gubbeen, a Red-Smear Cheese  
**M. C. Rea, S. Görge, R. Gelsomino, N. M. Brennan, J. Mounier, M. Vancanneyt, S. Scherer, J. Swings, and T. M. Cogan**.....2200

**PHYSIOLOGY AND MANAGEMENT:**

*Trans*-9, *Cis*-11 Conjugated Linoleic Acid Reduces Milk Fat Synthesis in Lactating Dairy Cows  
**J. W. Perfield II, A. L. Lock, J. M. Griinari, A. Sæbø, P. Delmonte, D. A. Dwyer, and D. E. Bauman** .....2211

*Technical Note:* Effect of Sampling Protocol on Plasma Nonesterified Fatty Acid Concentration in Dairy Cows  
**A. E. Brickner, R. R. Rastani, and R. R. Grummer** .....2219

Interaction of Somatic Cell Count and Quarter Milk Flow Patterns  
**V. Tančin, A. H. Ipema, and P. Hogewerf**.....2223

Effect of a Biological Response Modifier on Expression of Growth Factors and Cellular Proliferation at Drying Off  
**B. E. Dallard, V. Ruffino, S. Heffel, and L. F. Calvino**.....2229

*Short Communication:* Usage of Mechanical Brushes by Lactating Dairy Cows  
**T. J. DeVries, M. Vankova, D. M. Veira, and M. A. G. von Keyserlingk** .....2241

Housekeeping Gene Expression in Bovine Liver is Affected by Physiological State, Feed Intake, and Dietary Treatment  
**N. A. Janovick-Guretzky, H. M. Dann, D. B. Carlson, M. R. Murphy, J. J. Loor, and J. K. Drackley**.....2246

Application of a New Portable Microscopic Somatic Cell Counter with Disposable Plastic Chip for Milk Analysis  
**J. S. Moon, H. C. Koo, Y. S. Joo, S. H. Jeon, D. S. Hur, C. I. Chung, H. S. Jo, and Y. H. Park**.....2253

Yield Losses Associated with Clinical Mastitis Occurring in Different Weeks of Lactation  
**C. Hagnestam, U. Emanuelson, and B. Berglund**.....2260

Effects of Environmental Heat on Conception Rates in Lactating Dairy Cows: Critical Periods of Exposure  
**J. M. Morton, W. P. Tranter, D. G. Mayer, and N. N. Jonsson**.....2271

*Short Communication:* A Positive Relationship Between the First Ovulation Postpartum and the Increasing Ratio of Milk Yield in the First Part of Lactation in Dairy Cows  
**C. Kawashima, C. Amaya Montoya, Y. Masuda, E. Kaneko, M. Matsui, T. Shimizu, N. Matsunaga, K. Kida, Y.-I. Miyake, M. Suzuki, and A. Miyamoto** .....2279

A Probabilistic Neural Network Model for Lameness Detection  
**M. E. Pastell and M. Kujala** .....2283

Prepartum Milking of Heifers Influences Future Production and Health  
**K. J. Daniels, S. S. Donkin, S. D. Eicher, E. A. Pajor, and M. M. Schutz** .....2293

**NUTRITION, FEEDING, AND CALVES:**

*Technical Note:* Estimation of Milk Fatty Acid Yield from Milk Fat Data  
**F. Glasser, M. Doreau, A. Ferlay, and Y. Chilliard** .....2302

*Short Communication: Rate of Propionate Infusion Within Meals Does Not Influence Feeding Behavior*  
**B. J. Bradford and M. S. Allen** .....2305

The Effect of *Lactobacillus buchneri* 40788 on the Fermentation and Aerobic Stability of Ground and Whole High-Moisture Corn  
**L. Kung Jr., R. J. Schmidt, T. E. Ebling, and W. Hu**.....2309

Assessment of the Effects of Cinnamon Leaf Oil on Rumen Microbial Fermentation Using Two Continuous Culture Systems  
**G. R. Fraser, A. V. Chaves, Y. Wang, T. A. McAllister, K. A. Beauchemin, and C. Benchaar**.....2315

Performance and Ruminal Fermentation of Dairy Cows Fed Whole Cottonseed with Elevated Concentrations of Free Fatty Acids in the Oil  
**K. M. Cooke, J. K. Bernard, C. D. Wildman, J. W. West, and A. H. Parks** .....2329

Variations in Carotenoids, Vitamins A and E, and Color in Cow's Plasma and Milk During Late Pregnancy and the First Three Months of Lactation  
**F. Calderón, B. Chauveau-Duriot, B. Martin, B. Graulet, M. Doreau, and P. Nozière** .....2335

*Short Communication: Addition of Milk Replacer to Colostrum Whey: Effect on Immunoglobulin G Passive Transfer in Majorera Kids*  
**N. Castro, J. Capote, L. Morales, E. Quesada, H. Briggs, and A. Argüello** .....2347

Prevention of Clinical Mastitis with Barium Selenate in Dairy Goats from a Selenium-Deficient Area  
**J. Sánchez, P. Montes, A. Jiménez, and S. Andrés** .....2350

Effects of Chop Length of Alfalfa and Corn Silage on Milk Production and Rumen Fermentation of Dairy Cows  
**S. K. Bhandari, K. H. Ominski, K. M. Wittenberg, and J. C. Plaizier** .....2355

Effect of L-Carnitine Infusion and Feed Restriction on Carnitine Status in Lactating Holstein Cows  
**D. B. Carlson, J. C. Woodworth, and J. K. Drackley**.....2367

Estimation of the Proportion of Feed Protein Digested in the Small Intestine of Cattle Consuming Wet Corn Gluten Feed  
**P. J. Kononoff, S. K. Ivan, and T. J. Klopfenstein** .....2377

*Short Communication: Feed Selection by Dairy Cows Fed Individually in a Tie-Stall or as a Group in a Free-Stall Barn*  
**C. Leonardi and L. E. Armentano**.....2386

Effect of Roughage Source and Roughage to Concentrate Ratio on Animal Performance and Rumen Development in Veal Calves  
**B. J. Suárez, C. G. Van Reenen, N. Stockhofe, J. Dijkstra, and W. J. J. Gerrits**.....2390

Effect of a Soy Protein-Based Diet on Ribonucleic Acid Metabolism in the Small Intestinal Mucosa of Goat Kids  
**U. Schönhusen, S. Kuhla, R. Zitnan, K. D. Wutzke, K. Huber, S. Moors, and J. Voigt** .....2404

Supplemental Choline for Prevention and Alleviation of Fatty Liver in Dairy Cattle  
**R. F. Cooke, N. Silva del Río, D. Z. Caraviello, S. J. Bertics, M. H. Ramos, and R. R. Grummer**.....2413

**GENETICS AND BREEDING:**

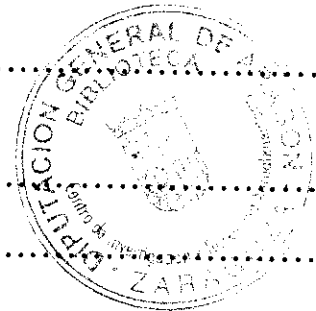
Selection Responses for Disease Resistance in Two Selection Experiments with Norwegian Red Cows  
**B. Heringstad, G. Klemetsdal, and T. Steine** .....2419

Pattern of Expression of the Uterine Milk Protein Gene and its Association with Productive Life in Dairy Cattle  
**H. Khatib, V. Schutzkus, Y. M. Chang, and G. J. M. Rosa** .....2427

Genetic Evaluations for Mixed-Breed Populations <b>P. M. VanRaden, M. E. Tooker, J. B. Cole, G. R. Wiggans, and J. H. Megonigal Jr.</b> .....	2434
Selection for Profit in Cattle: I. Economic Weights for Purebred Dairy Cattle in the Czech Republic <b>M. Wolfová, J. Wolf, J. Kvapilík, and J. Kica</b> .....	2442
Selection for Profit in Cattle: II. Economic Weights for Dairy and Beef Sires in Crossbreeding Systems <b>M. Wolfová, J. Wolf, J. Kvapilík, and J. Kica</b> .....	2456
Genetic Analysis of Milk Urea Nitrogen and Lactose and Their Relationships with Other Production Traits in Canadian Holstein Cattle <b>F. Miglior, A. Sewalem, J. Jamrozik, J. Bohmanova, D. M. Lefebvre, and R. K. Moore</b> .....	2468
Genetic Evaluation of Stillbirth in United States Holsteins Using a Sire-Maternal Grand sire Threshold Model <b>J. B. Cole, G. R. Wiggans, and P. M. VanRaden</b> .....	2480
Stillbirth (Co)Variance Components for a Sire-Maternal Grand sire Threshold Model and Development of a Calving Ability Index for Sire Selection <b>J. B. Cole, G. R. Wiggans, P. M. VanRaden, and R. H. Miller</b> .....	2489
Consequences of Selection for Yield Traits on Calving Ease Performance <b>E. López de Maturana, E. Ugarte, J. Komen, and J. A. M. van Arendonk</b> .....	2497
<b>OUR INDUSTRY TODAY:</b>	
A Cost and Returns Evaluation of Alternative Dairy Products to Determine Capital Investment and Operational Feasibility of a Small-Scale Dairy Processing Facility <b>K. M. Becker, R. L. Parsons, J. Kolodinsky, and G. N. Matiru</b> .....	2506
Longitudinal Monitoring of <i>Listeria monocytogenes</i> Contamination Patterns in a Farmstead Dairy Processing Facility <b>A. J. Ho, V. R. Lappi, and M. Wiedmann</b> .....	2517
A Model Describing <i>Debaryomyces hansenii</i> Growth and Substrate Consumption During a Smear Soft Cheese Deacidification and Ripening <b>M. H. Riahi, I. C. Trelea, D. Picque, M.-N. Leclercq-Perlat, A. Hélias, and G. Corrieu</b> .....	2525
A Field Study on Fertility and Purity of Sex-Sorted Cattle Sperm <b>I. Cerchiaro, M. Cassandro, R. Dal Zotto, P. Carnier, and L. Gallo</b> .....	2538
Danish Stable Schools for Experiential Common Learning in Groups of Organic Dairy Farmers <b>M. Vaarst, T. B. Nissen, S. Østergaard, I. C. Klaas, T. W. Bennedsgaard, and J. Christensen</b> .....	2543
Identifying Efficient Dairy Producers Using Data Envelopment Analysis <b>J. R. Stokes, P. R. Tozer, and J. Hyde</b> .....	2555
Use of Herd Solutions from a Random Regression Test-Day Model for Diagnostic Dairy Herd Management <b>M. Koivula, J. I. Nousiainen, J. Nousiainen, and E. A. Mäntysaari</b> .....	2563
Expected Net Present Value of Pure and Mixed Sexed Semen Artificial Insemination Strategies in Dairy Heifers <b>N. J. Olynk and C. A. Wolf</b> .....	2569
Errata.....	2577

## CONTENTS

<b>INTERPRETIVE SUMMARIES</b> .....	5
<b>GENERAL INTEREST:</b>	
Administrative Information .....	11
<b>NEWS AND ANNOUNCEMENTS</b> .....	12
<b>LETTER TO THE EDITOR:</b>	
<i>Letter to the Editor: Mastitis Treatment Trials</i>	
<b>S. Pyörälä</b> .....	2579
<b>INVITED REVIEW:</b>	
<i>Invited Review: Essential Oils as Modifiers of Rumen</i>	
Microbial Fermentation	
<b>S. Calsamiglia, M. Busquet, P. W. Cardozo, L. Castillejos, and A. Ferret</b> .....	2580
<b>DAIRY FOODS:</b>	
Butter Composition and Texture from Cows with Different Milk Fatty	
Acid Compositions Fed Fish Oil or Roasted Soybeans	
<b>G. Bobe, S. Zimmerman, E. G. Hammond, A. E. Freeman, P. A. Porter,</b>	
<b>C. M. Luhman, and D. C. Beitz</b> .....	2596
Gelation upon Long Storage of Milk Drinks with Carrageenan	
<b>R. L. M. Tijssen, L. S. Canabady-Rochelle, and M. Mellema</b> .....	2604
Effect of Insoluble Calcium Concentration on Rennet Coagulation	
Properties of Milk	
<b>J. Choi, D. S. Horne, and J. A. Lucey</b> .....	2612
Milk and Urine Excretion of Polycyclic Aromatic Hydrocarbons	
and Their Hydroxylated Metabolites After a Single Oral	
Administration in Ruminants	
<b>D. Lapole, G. Rychen, N. Grova, F. Monteau, B. Le Bizec, and C. Feidt</b> .....	2624
Effect of <i>Bifidobacterium bifidum</i> Fermented Milk on <i>Helicobacter pylori</i>	
and Serum Pepsinogen Levels in Humans	
<b>K. Miki, Y. Urita, F. Ishikawa, T. Iino, H. Shibahara-Sone, R. Akahoshi,</b>	
<b>S. Mizusawa, A. Nose, D. Nozaki, K. Hirano, C. Nonaka, and T. Yokokura</b> .....	2630
Industrial Yogurt Manufacture: Monitoring of Fermentation Process	
and Improvement of Final Product Quality	
<b>C. Soukoulis, P. Panagiotidis, R. Koureli, and C. Tzia</b> .....	2641
Effect of Iron Saturation on the Recovery of Lactoferrin in Rennet Whey	
Coming from Heat-Treated Skim Milk	
<b>G. Brisson, M. Britten, and Y. Pouliot</b> .....	2655
Thermocalcic Aggregation of Milk Fat Globule Membrane Fragments	
from Acid Buttermilk Cheese Whey	
<b>R. Rombaut and K. Dewettinck</b> .....	2665



Effect of Type of Concentrated Sweet Cream Buttermilk on the Manufacture, Yield, and Functionality of Pizza Cheese <b>S. Govindasamy-Lucey, T. Lin, J. J. Jaeggi, C. J. Martinelli, M. E. Johnson, and J. A. Lucey</b> .....	2675
Characterization of Italian Cheeses Ripened Under Nonconventional Conditions <b>R. Di Cagno, S. Buchin, S. de Candia, M. De Angelis, P. F. Fox, and M. Gobbetti</b> .....	2689
Solubilized Micellar Calcium Induced Low Methoxyl-Pectin Aggregation During Milk Acidification <b>F. M. Harte, C. Montes, M. Adams, and M. F. San Martin-Gonzalez</b> .....	2705
Development of New Probiotics by Strain Combinations: Is It Possible to Improve the Adhesion to Intestinal Mucus? <b>M. C. Collado, J. Meriluoto, and S. Salminen</b> .....	2710
Occurrence of Polycyclic Aromatic Hydrocarbons in Artisanal Palmero Cheese Smoked with Two Types of Vegetable Matter <b>M. D. Guillén, G. Palencia, P. Sopelana, and M. L. Ibargoitia</b> .....	2717
<b>PHYSIOLOGY AND MANAGEMENT:</b>	
Abundance and Phosphorylation State of Translation Initiation Factors in Mammary Glands of Lactating and Nonlactating Dairy Cows <b>C. A. Toerien and J. P. Cant</b> .....	2726
Induction of Hyperlipidemia by Intravenous Infusion of Tallow Emulsion Causes Insulin Resistance in Holstein Cows <b>J. A. A. Pires, A. H. Souza, and R. R. Grummer</b> .....	2735
<i>Bacillus cereus</i> Spores During Housing of Dairy Cows: Factors Affecting Contamination of Raw Milk <b>M. Magnusson, A. Christiansson, and B. Svensson</b> .....	2745
Methane Emissions from Dairy Cows Measured Using the Sulfur Hexafluoride (SF <sub>6</sub> ) Tracer and Chamber Techniques <b>C. Grainger, T. Clarke, S. M. McGinn, M. J. Auld, K. A. Beauchemin, M. C. Hannah, G. C. Waghorn, H. Clark, and R. J. Eckard</b> .....	2755
Contribution of Macrophages to Proteolysis and Plasmin Activity in Ewe Bulk Milk <b>M. Caroprese, A. Marzano, L. Schena, R. Marino, A. Santillo, and M. Albenzio</b> .....	2767
Behavior, Milk Yield, and Milk Composition of Machine- and Hand- Milked Murgesse Mares <b>M. Caroprese, M. Albenzio, R. Marino, A. Muscio, T. Zezza, and A. Sevi</b> .....	2773
Efficacy of a Lactoferrin-Penicillin Combination to Treat $\beta$ -Lactam- Resistant <i>Staphylococcus aureus</i> Mastitis <b>D. Petitlerc, K. Lauzon, A. Cochu, C. Ster, M. S. Diarra, and P. Lacasse</b> .....	2778
The Effect of Subclinical Ketosis in Early Lactation on Reproductive Performance of Postpartum Dairy Cows <b>R. B. Walsh, J. S. Walton, D. F. Kelton, S. J. LeBlanc, K. E. Leslie, and T. F. Duffield</b> .....	2788
Effect of Stillbirths on Dam Survival and Reproduction Performance in Holstein Dairy Cows <b>R. C. Bicalho, K. N. Galvão, S. H. Cheong, R. O. Gilbert, L. D. Warnick, and C. L. Guard</b> ....	2797
Rectal Temperature, Calving-Related Factors, and the Incidence of Puerperal Metritis in Postpartum Dairy Cows <b>M. E. Benzaquen, C. A. Risco, L. F. Archbald, P. Melendez, M.-J. Thatcher, and W. W. Thatcher</b> .....	2804
Risk Factors for Changing Test Classification in the Danish Surveillance Program for <i>Salmonella</i> in Dairy Herds <b>L. R. Nielsen, L. D. Warnick, and M. Greiner</b> .....	2815

**NUTRITION, FEEDING, AND CALVES:**

- Altering Physically Effective Fiber Intake Through Forage Proportion  
and Particle Length: Chewing and Ruminant pH  
**W. Z. Yang and K. A. Beauchemin** .....2826
- Enhancing In Vitro Degradation of Alfalfa Hay and Corn Silage Using  
Feed Enzymes  
**J.-S. Eun and K. A. Beauchemin** .....2839
- Effect of Grains Differing in Expected Ruminant Fermentability  
on the Productivity of Lactating Dairy Cows  
**C. Silveira, M. Oba, K. A. Beauchemin, and J. Helm** .....2852
- Selection of Barley Grain Affects Ruminant Fermentation, Starch  
Digestibility, and Productivity of Lactating Dairy Cows  
**C. Silveira, M. Oba, W. Z. Yang, and K. A. Beauchemin** .....2860
- Effects of the Method of Conservation of Timothy on Nitrogen Metabolism  
in Lactating Dairy Cows  
**R. Martineau, H. Lapierre, D. R. Ouellet, D. Pellerin, and R. Berthiaume** .....2870
- Effects of Fescue Type and Sampling Date on the Ruminant Disappearance  
Kinetics of Autumn-Stockpiled Tall Fescue  
**R. Flores, W. K. Coblenz, R. K. Ogden, K. P. Coffey, M. L. Looper, C. P. West,  
and C. F. Rosenkrans Jr.**.....2883
- Diet Supplementation with Fish Oil and Sunflower Oil to Increase  
Conjugated Linoleic Acid Levels in Milk Fat of Partially Grazing  
Dairy Cows  
**A. A. AbuGhazaleh and L. D. Holmes** .....2897
- Short Communication:* Absorption of Protein and Immunoglobulin G  
in Calves Fed a Colostrum Replacer  
**G. W. Smith and D. M. Foster** .....2905
- Ruminant and Intestinal Degradability of Distillers Grains plus Solubles  
Varies by Source  
**D. H. Kleinschmit, J. L. Anderson, D. J. Schingoethe, K. F. Kalscheur, and A. R. Hippen** ...2909
- Cheese Manufacture with Milk with Elevated Conjugated Linoleic Acid  
Levels Caused by Dietary Manipulation  
**M. Coakley, E. Barrett, J. J. Murphy, R. P. Ross, R. Devery, and C. Stanton**.....2919
- Production Performance and Milk Composition of Dairy Cows Fed Whole  
or Ground Flaxseed With or Without Monensin  
**D. C. da Silva, G. T. Santos, A. F. Branco, J. C. Damasceno, R. Kazama, M. Matsushita,  
J. A. Horst, W. B. R. dos Santos, and H. V. Petit**.....2928
- Short Communication:* Absorption of 2-Hydroxy-4-Methylthiobutanoate  
in Dairy Cows  
**H. Lapierre, M. Vázquez-Añón, D. Parker, P. Dubreuil, and G. E. Lobley** .....2937
- Prepartum Nutrition Alters Fatty Acid Composition in Plasma, Adipose  
Tissue, and Liver Lipids of Periparturient Dairy Cows  
**G. N. Douglas, J. Rehage, A. D. Beaulieu, A. O. Bahaa, and J. K. Drackley**.....2941
- Effect of Level of Metabolizable Protein on Milk Production and Nitrogen  
Utilization in Lactating Dairy Cows  
**C. Wang, J. X. Liu, Z. P. Yuan, Y. M. Wu, S. W. Zhai, and H. W. Ye**.....2960

**GENETICS AND BREEDING:**

- The Association of Bovine *PPARGC1A* and *OPN* Genes with Milk  
Composition in Two Independent Holstein Cattle Populations  
**H. Khatib, I. Zaitoun, J. Wiebelhaus-Finger, Y. M. Chang, and G. J. M. Rosa** .....2966



Statistical Modeling of Candidate Gene Effects on Milk Production Traits  
in Dairy Cattle  
**J. Szyda and J. Komisarek**.....2971

Characterization of the *DGAT1* K232A and Variable Number of Tandem  
Repeat Polymorphisms in French Dairy Cattle  
**M. Gautier, A. Capitan, S. Fritz, A. Eggen, D. Boichard, and T. Druet**.....2980

Characterization of the Casein Gene Complex in West African Goats  
and Description of a New  $\alpha_{S1}$ -Casein Polymorphism  
**A. Caroli, F. Chiatti, S. Chessa, D. Rignanese, E. M. Ibeagha-Awemu, and G. Erhardt** .....2989

Characterization of Genetic Polymorphism of the Bovine Lymphocyte  
Antigen DRB3.2 Locus in Kankrej Cattle (*Bos indicus*)  
**J. D. Behl, N. K. Verma, R. Behl, M. Mukesh, and S. P. S. Ahlawat** .....2997

A Stochastic Simulation Study on Validation of an Approximate  
Multitrait Model Using Preadjusted Data for Prediction  
of Breeding Values  
**J. Lassen, M. K. Sørensen, P. Madsen, and V. Ducrocq** .....3002

*Short Communication: Identification of Two Polymorphisms in the Goat  
Lipoprotein Lipase Gene and Their Association with Milk  
Production Traits*  
**B. Badaoui, J. M. Serradilla, A. Tomàs, B. Urrutia, J. L. Ares, J. Carrizosa,  
A. Sánchez, J. Jordana, and M. Amills**.....3012

**OUR INDUSTRY TODAY:**

Evaluation of Chemical Parameters in Soft Mold-Ripened Cheese During  
Ripening by Mid-Infrared Spectroscopy  
**S. T. Martín-del-Campo, D. Picque, R. Cosío-Ramírez, and G. Corrieu** .....3018

Effects of Physical Form of a Starter for Dairy Replacement Calves  
on Feed Intake and Performance  
**A. Bach, A. Giménez, J. L. Juaristi, and J. Ahedo** .....3028

Efficiency of Use of Imported Magnesium, Sulfur, Copper, and Zinc  
on Idaho Dairy Farms  
**A. N. Hristov, W. Hazen, and J. W. Ellsworth**.....3034

Optimal Choice of Dairy Forages in Eastern Australia  
**M. Neal, J. Neal, and W. J. Fulkerson**.....3044

The Effect of Early-Lactation Feeding Strategy on the Lactation  
Performance of Spring-Calving Dairy Cows  
**E. Kennedy, M. O'Donovan, F. P. O'Mara, J. P. Murphy, and L. Delaby** .....3060

Erratum.....3071

2007 ASAS ADSA Midwest Meeting Abstracts .....3072

Acknowledgment of 2005–2006 Reviewers .....3081

**NOTICE: Page Charges for Publication**

The page charge per printed page is \$85 for professional members and \$140 for nonmembers for papers published in *Journal of Dairy Science*

**Future Annual Meetings**

**2007–July 8–12, San Antonio, TX**

# Journal of Dairy Science

July 2007

Volume 90, Number 7

## CONTENTS

INTERPRETIVE SUMMARIES.....	5
GENERAL INTEREST:	
Administrative Information .....	12
NEWS AND ANNOUNCEMENTS.....	13
DAIRY FOODS:	
Characterization of Flavor and Texture Development Within Large (291 kg) Blocks of Cheddar Cheese M. E. Carunchia Whetstone, P. J. Luck, M. A. Drake, E. A. Foegeding, P. D. Gerard, and D. M. Barbano .....	3091
Ultrafiltered Milk Reduces Bitterness in Reduced-Fat Cheddar Cheese Made with an Exopolysaccharide-Producing Culture P. Agrawal and A. N. Hassan.....	3110
Estimation of Storage Time of Yogurt with Artificial Neural Network Modeling A. Sofu and F. Y. Ekinci.....	3118
Study on Milk-Clotting Mechanism of Rennet-Like Enzyme from Glutinous Rice Wine: Proteolytic Property and the Cleavage Site on $\kappa$ -Casein T. Jiang, L. J. Chen, L. Xue, and L. S. Chen .....	3126
Rennet Paste from Lambs Fed a Milk Substitute Supplemented with <i>Lactobacillus acidophilus</i> : Effects on Lipolysis in Ovine Cheese A. Santillo, M. Quinto, M. Dentico, A. Muscio, A. Sevi, and M. Albenzio.....	3134
Characterization of Carbohydrate Structures of Bovine MUC15 and Distribution of the Mucin in Bovine Milk L. T. Pallesen, L. R. L. Pedersen, T. E. Petersen, and J. T. Rasmussen.....	3143
Evaluation of the MilkoScan FT 6000 Milk Analyzer for Determining the Freezing Point of Goat's Milk Under Different Analytical Conditions A. Sánchez, D. Sierra, C. Luengo, J. C. Corrales, C. de la Fe, C. T. Morales, A. Contreras, and C. Gonzalo .....	3153
Computer Vision and Color Measurement Techniques for Inline Monitoring of Cheese Curd Syneresis C. D. Everard, D. J. O'Callaghan, C. C. Fagan, C. P. O'Donnell, M. Castillo, and F. A. Payne.....	3162
A Probiotic, <i>Lactobacillus fermentum</i> ME-3, Has Antioxidative Capacity in Soft Cheese Spreads with Different Fats S. Järvenpää, R. L. Tahvonen, A. C. Ouwehand, M. Sandell, E. Järvenpää, and S. Salminen .....	3171
Effects of Ultraviolet Irradiation on Chemical and Sensory Properties of Goat Milk K. E. Matak, S. S. Sumner, S. E. Duncan, E. Hovingh, R. W. Worobo, C. R. Hackney, and M. D. Pierson .....	3178

18 MAYO 2008



Influence of Somatic Cell Count and Breed on Capillary Electrophoretic Protein Profiles of Ewes' Milk: A Chemometric Study <b>J. M. Rodríguez-Nogales, A. M. Vivar-Quintana, and I. Revilla</b> .....	3187
Aflatoxin M <sub>1</sub> and Ochratoxin A in Raw Bulk Milk from French Dairy Herds <b>H. Boudra, J. Barnouin, S. Dragacci, and D. P. Morgavi</b> .....	3197
Thermal Inactivation of Foot-and-Mouth Disease Virus in Milk Using High-Temperature, Short-Time Pasteurization <b>P. M. Tomasula, M. F. Kozempel, R. P. Konstance, D. Gregg, S. Boettcher, B. Baxt, and L. L. Rodriguez</b> .....	3202
Incidence of <i>Escherichia coli</i> O157:H7 and <i>E. coli</i> Virulence Factors in US Bulk Tank Milk as Determined by Polymerase Chain Reaction <b>J. S. Karns, J. S. Van Kessel, B. J. McClusky, and M. L. Perdue</b> .....	3212
<b>PHYSIOLOGY AND MANAGEMENT:</b>	
Prepartum Behavior and Dry Matter Intake Identify Dairy Cows at Risk for Metritis <b>J. M. Huzzey, D. M. Veira, D. M. Weary, and M. A. G. von Keyserlingk</b> .....	3220
Effects of Varying Lactation Length on Milk Production Capacity of Cows in Pasture-Based Dairying Systems <b>M. J. Auldist, G. O'Brien, D. Cole, K. L. Macmillan, and C. Grainger</b> .....	3234
<i>Technical Note:</i> Antimicrobial Susceptibility of Portuguese Isolates of <i>Staphylococcus aureus</i> and <i>Staphylococcus epidermidis</i> in Subclinical Bovine Mastitis <b>S. F. Nunes, R. Bexiga, L. M. Cavaco, and C. L. Vilela</b> .....	3242
Glucose-Dependent Insulin Response and Milk Production in Heifers Within a Segregating Resource Family Population <b>H. M. Hammon, O. Bellmann, J. Voigt, F. Schneider, and C. Kühn</b> .....	3247
Assessment of a Practical Method for Identifying Anovular Dairy Cows Synchronized for First Postpartum Timed Artificial Insemination <b>E. Silva, R. A. Sterry, and P. M. Fricke</b> .....	3255
Factors Affecting the Plasmin-Plasminogen System in Milk Obtained from Three Greek Dairy Sheep Breeds with Major Differences in Milk Production Capacity <b>G. Theodorou, A. Kominakis, E. Rogdakis, and I. Politis</b> .....	3263
Management Factors Associated with Impaired Locomotion in Dairy Cows in England and Wales <b>Z. E. Barker, J. R. Amory, J. L. Wright, R. W. Blowey, and L. E. Green</b> .....	3270
Minimizing the Level of Butyric Acid Bacteria Spores in Farm Tank Milk <b>M. M. M. Vissers, F. Driehuis, M. C. Te Giffel, P. De Jong, and J. M. G. Lankveld</b> .....	3278
Minimizing the Level of <i>Bacillus cereus</i> Spores in Farm Tank Milk <b>M. M. M. Vissers, M. C. Te Giffel, F. Driehuis, P. De Jong, and J. M. G. Lankveld</b> .....	3286
Association Between a Visual and an Automated Locomotion Score in Lactating Holstein Cows <b>R. C. Bicalho, S. H. Cheong, G. Cramer, and C. L. Guard</b> .....	3294
Bovine Intramammary Infections Caused by Coagulase-Negative Staphylococci May Persist Throughout Lactation According to Amplified Fragment Length Polymorphism-Based Analysis <b>S. Taponen, J. Koort, J. Björkroth, H. Saloniemi, and S. Pyörälä</b> .....	3301
Concentrations of 17 $\beta$ -Estradiol in Holstein Whole Milk <b>D. A. Pape-Zambito, A. L. Magliaro, and R. S. Kensinger</b> .....	3308

Effects of Genetic Selection for Milk Yield on Somatotropin, Insulin-Like Growth Factor-I, and Placental Lactogen in Holstein Cows <b>W. J. Weber, C. R. Wallace, L. B. Hansen, H. Chester-Jones, and B. A. Crooker</b> .....	3314
Effects of <i>Trans</i> -10, <i>Cis</i> -12 Conjugated Linoleic Acid on Ovine Milk Fat Synthesis and Cheese Properties <b>L. A. Sinclair, A. L. Lock, R. Early, and D. E. Bauman</b> .....	3326
Innate Immune Response to Intramammary <i>Mycoplasma bovis</i> Infection <b>A. C. W. Kauf, R. F. Rosenbusch, M. J. Paape, and D. D. Bannerman</b> .....	3336
Overstocking Reduces Lying Time in Dairy Cows <b>J. A. Fregonesi, C. B. Tucker, and D. M. Weary</b> .....	3349
<b>NUTRITION, FEEDING, AND CALVES:</b>	
Dietary Cation-Anion Difference and Dietary Protein Effects on Performance and Acid-Base Status of Dairy Cows in Early Lactation <b>W. Hu, M. R. Murphy, P. D. Constable, and E. Block</b> .....	3355
Dietary Cation-Anion Difference Effects on Performance and Acid-Base Status of Dairy Cows Postpartum <b>W. Hu, M. R. Murphy, P. D. Constable, and E. Block</b> .....	3367
Structural Growth, Rumen Development, and Metabolic and Immune Responses of Holstein Male Calves Fed Milk Through Step-Down and Conventional Methods <b>M. A. Khan, H. J. Lee, W. S. Lee, H. S. Kim, K. S. Ki, T. Y. Hur, G. H. Suh, S. J. Kang, and Y. J. Choi</b> .....	3376
The Effects of Controlled Feeding of a High-Forage or High-Concentrate Ration on Heifer Growth and First-Lactation Milk Production <b>G. I. Zanton and A. J. Heinrichs</b> .....	3388
Effect of Glucogenic vs. Lipogenic Diets on Energy Balance, Blood Metabolites, and Reproduction in Primiparous and Multiparous Dairy Cows in Early Lactation <b>A. T. M. van Knegsel, H. van den Brand, J. Dijkstra, W. M. van Straalen, R. Jorritsma, S. Tamminga, and B. Kemp</b> .....	3397
Altering Physically Effective Fiber Intake Through Forage Proportion and Particle Length: Digestion and Milk Production <b>W. Z. Yang and K. A. Beauchemin</b> .....	3410
Dietary L-Carnitine Affects Periparturient Nutrient Metabolism and Lactation in Multiparous Cows <b>D. B. Carlson, J. W. McFadden, A. D'Angelo, J. C. Woodworth, and J. K. Drackley</b> .....	3422
Effects of Dietary Supplements of Folic Acid and Vitamin B <sub>12</sub> on Metabolism of Dairy Cows in Early Lactation <b>B. Graulet, J. J. Matte, A. Desrochers, L. Doepel, M.-F. Palin, and C. L. Girard</b> .....	3442
Prediction of Methane Production from Dairy and Beef Cattle <b>J. L. Ellis, E. Kebreab, N. E. Odongo, B. W. McBride, E. K. Okine, and J. France</b> .....	3456
Effects of Chromium Propionate on Response to an Intravenous Glucose Tolerance Test in Growing Holstein Heifers <b>J. M. Sumner, F. Valdez, and J. P. McNamara</b> .....	3467
The Feeding Value of Extruded Corn Grain in a Corn Silage-Based Ration for High-Producing Holstein Cows and Heifers During Mid Lactation <b>P. Rezamand, S. M. Andrew, and T. A. Hoagland</b> .....	3475

**GENETICS AND BREEDING:**

A Genome Scan for Quantitative Trait Locus by Environment Interactions for Production Traits  
**M. Lillehammer, M. Árnýasi, S. Lien, H. G. Olsen, E. Sehested, J. Ødegård, and T. H. E. Meuwissen** .....3482

Prenatal Maternal Effects on Body Condition Score, Female Fertility, and Milk Yield of Dairy Cows  
**G. Banos, S. Brotherstone, and M. P. Coffey**.....3490

Genetic Analysis of Calving Difficulty and Stillbirth in Norwegian Red Cows  
**B. Heringstad, Y. M. Chang, M. Svendsen, and D. Gianola**.....3500

Inferring Relationships Between Somatic Cell Score and Milk Yield Using Simultaneous and Recursive Models  
**X.-L. Wu, B. Heringstad, Y.-M. Chang, G. de los Campos, and D. Gianola** .....3508

Molecular Characterization of Bovine *CSN1S2\*B* and Extensive Distribution of Zebu-Specific Milk Protein Alleles in European Cattle  
**E. M. Ibeagha-Awemu, E.-M. Prinzenberg, O. C. Jann, G. Lühken, A. E. Ibeagha, X. Zhao, and G. Erhardt**.....3522

Genetic Diversity and Joint-Pedigree Analysis of Two Importing Holstein Populations  
**H. Hammami, C. Croquet, J. Stoll, B. Rekik, and N. Gengler** .....3530

Milk, Fat, Protein, Somatic Cell Score, and Days Open Among Holstein, Brown Swiss, and Their Crosses  
**C. D. Dechow, G. W. Rogers, J. B. Cooper, M. I. Phelps, and A. L. Mosholder** .....3542

*Technical Note:* A Simple Salting-Out Method for DNA Extraction from Milk Somatic Cells: Investigation into the Goat *CSN1S1* Gene  
**F. d'Angelo, A. Santillo, A. Sevi, and M. Albenzio** .....3550

*Short Communication:* Effect of Stearoyl-Coenzyme A Desaturase Polymorphism on Fatty Acid Composition of Milk  
**B. Moioli, G. Contarini, A. Avalli, G. Catillo, L. Orrù, G. De Matteis, G. Masoero, and F. Napolitano** .....3553

**OUR INDUSTRY TODAY:**

Influence of Free-Stall Base on Tarsal Joint Lesions and Hygiene in Dairy Cows  
**W. K. Fulwider, T. Grandin, D. J. Garrick, T. E. Engle, W. D. Lamm, N. L. Dalsted, and B. E. Rollin** .....3559

**NOTICE: Page Charges for Publication**

The page charge per printed page is \$85 for professional members and \$140 for nonmembers for papers published in *Journal of Dairy Science*

Future Annual Meetings  
 2008–July 7–11, Indianapolis, IN  
 2009–July 12–16, Montreal, Canada  
 2010–July 11–15, Denver, CO

18 MAYO 2008

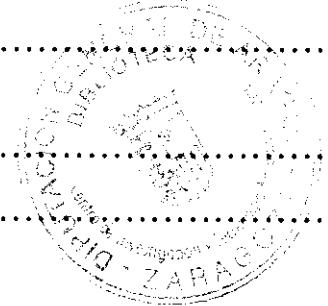
# Journal of Dairy Science

August 2007

Volume 90, Number 8

## CONTENTS

INTERPRETIVE SUMMARIES .....	5
GENERAL INTEREST:	
Administrative Information .....	11
NEWS AND ANNOUNCEMENTS .....	12
LETTER TO THE EDITOR:	
<i>Letter to the Editor: The Effects of Force-Feeding Sick Dairy Calves: A     Comment on Quigley et al. (2006)</i> <b>F. Borderas, M. A. G. von Keyserlingk, D. M. Weary, J. Rushen, A. M. de Passillé,     and M. E. Van Amburgh</b> .....	3567
<i>Letter to the Editor: A Response to the Comments of Borderas     et al. (2007)</i> <b>J. D. Quigley, T. A. Wolfe, and T. H. Elsasser</b> .....	3569
DAIRY FOODS:	
In Vitro Assessment of the Gastrointestinal Transit Tolerance of Taxonomic Reference Strains from Human Origin and Probiotic Product Isolates of <i>Bifidobacterium</i> <b>L. Masco, C. Crockaert, K. Van Hoorde, J. Swings, and G. Huys</b> .....	3572
<i>Short Communication: Quantification of the Transmission     of Microorganisms to Milk via Dirt Attached to the Exterior of Teats</i> <b>M. M. M. Vissers, F. Driehuis, M. C. Te Giffel, P. De Jong, and J. M. G. Lankveld</b> .....	3579
Safety Assessment of the Human Milk-Isolated Probiotic <i>Lactobacillus     salivarius</i> CECT5713 <b>F. Lara-Villoslada, S. Sierra, M. P. Díaz-Ropero, M. Olivares, and J. Xaus</b> .....	3583
Prevalence of <i>Mycobacterium avium</i> Subspecies <i>paratuberculosis</i> in Swiss Raw Milk Cheeses Collected at the Retail Level <b>R. Stephan, S. Schumacher, T. Tasara, and I. R. Grant</b> .....	3590
Application of Fourier Transform Infrared Spectroscopy for Monitoring Short-Chain Free Fatty Acids in Swiss Cheese <b>N. Koca, L. E. Rodriguez-Saona, W. J. Harper, and V. B. Alvarez</b> .....	3596
Reduced Fat Process Cheese Made from Young Reduced Fat Cheddar Cheese Manufactured with Exopolysaccharide-Producing Cultures <b>A. N. Hassan, S. Awad, and V. V. Mistry</b> .....	3604
Infrared Spectroscopy Technique for the Nondestructive Measurement of Fat Content in Milk Powder <b>D. Wu, S. Feng, and Y. He</b> .....	3613
Lactose Crystallization Delay in Model Infant Foods Made With Lactose, $\beta$ -Lactoglobulin, and Starch <b>A. Nasirpour, V. Landillon, B. Cuq, J. Scher, S. Banon, and S. Desobry</b> .....	3620
Volatile Compounds, Odor, and Aroma of La Serena Cheese High- Pressure Treated at Two Different Stages of Ripening <b>J. L. Arqués, S. Garde, E. Fernández-García, P. Gaya, and M. Nuñez</b> .....	3627



**PHYSIOLOGY AND MANAGEMENT:**

- Supplementation of *RRR*- $\alpha$ -Tocopheryl Acetate to Periparturient Dairy Cows in Commercial Herds with High Mastitis Incidence  
**K. Persson Waller, C. Hallén Sandgren, U. Emanuelson, and S. K. Jensen**.....3640
- Effect of Softer Flooring in Tie Stalls on Resting Behavior and Leg Injuries of Lactating Cows  
**J. Rushen, D. Haley, and A. M. de Passillé** .....3647
- Herd Management Practices and Their Association with Bulk Tank Somatic Cell Count on United States Dairy Operations  
**J. R. Wenz, S. M. Jensen, J. E. Lombard, B. A. Wagner, and R. P. Dinsmore** .....3652
- Prepartum 2,4-Thiazolidinedione Alters Metabolic Dynamics and Dry Matter Intake of Dairy Cows  
**K. L. Smith, S. E. Stebulis, M. R. Waldron, and T. R. Overton** .....3660
- Sprinklers and Shade Cool Cows and Reduce Insect-Avoidance Behavior in Pasture-Based Dairy Systems  
**P. E. Kendall, G. A. Verkerk, J. R. Webster, and C. B. Tucker** .....3671
- Genetic Diversity of Mastitis-Associated *Klebsiella pneumoniae* in Dairy Cows  
**G. G. Paulin-Curlee, R. S. Singer, S. Sreevatsan, R. Isaacson, J. Reneau, D. Foster, and R. Bey**.....3681
- Comparison of Stress Zones in Finite Element Models of Deformed Bovine Claw Capsules  
**C. Hinterhofer, V. Apprich, E. Polsterer, H. Haider, and C. Stanek** .....3690
- Economic and Phosphorus-Related Effects of Precision Feeding and Forage Management at a Farm Scale  
**L. T. Ghebremichael, P. E. Cerosaletti, T. L. Veith, C. A. Rotz, J. M. Hamlett, and W. J. Gburek**.....3700
- Dairy Cow Preferences for Soft or Hard Flooring when Standing or Walking  
**E. Telezhenko, L. Lidfors, and C. Bergsten**.....3716
- The Use of Nicotinic Acid to Induce Sustained Low Plasma Nonesterified Fatty Acids in Feed-Restricted Holstein Cows  
**J. A. A. Pires and R. R. Grummer**.....3725
- Somatic Cell Count During and Between Milkings  
**R. G. M. Olde Riekerink, H. W. Barkema, W. Veenstra, F. E. Berg, H. Stryhn, and R. N. Zadoks** .....3733
- Effect of Estrogen on Leptin and Expression of Leptin Receptor Transcripts in Prepubertal Dairy Heifers  
**S. R. Thorn, M. J. Meyer, M. E. Van Amburgh, and Y. R. Boisclair** .....3742
- Mammogenesis and Induced Lactation With or Without Reserpine in Nulliparous Dairy Goats  
**A. A. K. Salama, G. Caja, E. Albanell, S. Carné, R. Casals, and X. Such**.....3751
- Treatment of Acute Puerperal Metritis with Flunixin Meglumine in Addition to Antibiotic Treatment  
**M. Drillich, D. Voigt, D. Forderung, and W. Heuwieser** .....3758
- Cow, Farm, and Management Factors During the Dry Period that Determine the Rate of Clinical Mastitis After Calving  
**M. J. Green, A. J. Bradley, G. F. Medley, and W. J. Browne** .....3764

**NUTRITION, FEEDING, AND CALVES:**

- A Mathematical Approach to Predicting Biological Values from Ruminal pH Measurements  
**O. AlZahal, E. Kebreab, J. France, and B. W. McBride** .....3777

Evaluating the Conjugated Linoleic Acid and *Trans* 18:1 Isomers in Milk Fat of Dairy Cows Fed Increasing Amounts of Sunflower Oil and a Constant Level of Fish Oil  
**C. Cruz-Hernandez, J. K. G. Kramer, J. J. Kennelly, D. R. Glimm, B. M. Sorensen, E. K. Okine, L. A. Goonewardene, and R. J. Weselake** .....3786

Relationships Among Body Condition Score, Body Weight, and Milk Production Variables in Pasture-Based Dairy Cows  
**J. R. Roche, J. M. Lee, K. A. Macdonald, and D. P. Berry** .....3802

A Redefinition of the Representation of Mammary Cells and Enzyme Activities in a Lactating Dairy Cow Model  
**M. D. Hanigan, A. G. Rius, E. S. Kolver, and C. C. Palliser**.....3816

Use of Flavored Drinking Water in Calves and Lactating Dairy Cattle  
**L. C. Thomas, T. C. Wright, A. Formusiak, J. P. Cant, and V. R. Osborne** .....3831

Depression in Feed Intake by a Highly Fermentable Diet Is Related to Plasma Insulin Concentration and Insulin Response to Glucose Infusion  
**B. J. Bradford and M. S. Allen** .....3838

Effects of Peripartum Propylene Glycol or Fats Differing in Fatty Acid Profiles on Feed Intake, Production, and Plasma Metabolites in Dairy Cows  
**U. Moallem, M. Katz, A. Arieli, and H. Lehrer** .....3846

Passive Transfer of Immunoglobulin G and Prewaning Health in Holstein Calves Fed a Commercial Colostrum Replacer  
**H. Swan, S. Godden, R. Bey, S. Wells, J. Fetrow, and H. Chester-Jones**.....3857

Effects of Feedborne *Fusarium* Mycotoxins on the Performance, Metabolism, and Immunity of Dairy Cows  
**S. N. Korosteleva, T. K. Smith, and H. J. Boermans**.....3867

Effects of Fatty Acid Oxidation Products (Green Odor) on Rumen Bacterial Populations and Lipid Metabolism In Vitro  
**M. R. F. Lee, S. A. Huws, N. D. Scollan, and R. J. Dewhurst** .....3874

**GENETICS AND BREEDING:**

Environmental Sensitivity of Milk Production in Extensive Environments: A Comparison of Simmental, Brown Swiss, and Tyrol Grey Using Random Regression Models  
**H. Bytyqi, J. Ødegård, H. Mehmeti, M. Vegara, and G. Klemetsdal**.....3883

Genotype by Environment Interaction for Production Traits While Accounting for Heteroscedasticity  
**A. G. Fahey, M. M. Schutz, D. L. Lofgren, A. P. Schinckel, and T. S. Stewart** .....3889

Heterogeneity of Genetic Parameters for Calving Difficulty in Holstein Heifers in Ireland  
**J. M. Hickey, M. G. Keane, D. A. Kenny, A. R. Cromie, P. R. Amer, and R. F. Veerkamp**....3900

Metabolic Regulation in Danish Bull Calves and the Relationship to the Fertility of Their Female Offspring  
**C. Hayhurst, M. K. Sørensen, M. D. Royal, and P. Løvendahl**.....3909

Genetic Analysis of Male and Female Fertility After Artificial Insemination in Sheep: Comparison of Single-Trait and Joint Models  
**I. David, L. Bodin, G. Lagriffoul, C. Leymarie, E. Manfredi, and C. Robert-Granié** .....3917

Modeling Extended Lactations of Holsteins  
**C. M. B. Dematawewa, R. E. Pearson, and P. M. VanRaden**.....3924

Consistency of Maturity Rate for Milk Yield Across Countries and Generations  
**H. D. Norman, J. R. Wright, R. L. Powell, P. M. VanRaden, F. Miglior, and G. de Jong**.....3937



Genetic Analysis of Traits Affecting the Success of Embryo Transfer  
in Dairy Cattle  
**S. König, F. Bosselmann, U. U. von Borstel, and H. Simianer**.....3945

*Short Communication:* Composition of Milk Protein and Milk Fatty Acids  
Is Stable for Cows Differing in Genetic Merit for Milk Production  
**G. Bobe, G. L. Lindberg, A. E. Freeman, and D. C. Beitz**.....3955

**OUR INDUSTRY TODAY:**

Organic Dairy Production Systems in Pennsylvania: A Case Study  
Evaluation  
**C. A. Rotz, G. H. Kamphuis, H. D. Karsten, and R. D. Weaver** .....3961

Efficacy of Nisin in Treatment of Clinical Mastitis in Lactating  
Dairy Cows  
**L. T. Cao, J. Q. Wu, F. Xie, S. H. Hu, and Y. Mo**.....3980

Milk Coagulation Ability of Five Dairy Cattle Breeds  
**M. De Marchi, R. Dal Zotto, M. Cassandro, and G. Bittante**.....3986

A Comparison of Three Strains of Holstein-Friesian Cows Grazed  
on Pasture: Growth, Development, and Puberty  
**K. A. Macdonald, L. R. McNaughton, G. A. Verkerk, J. W. Penno, L. J. Burton,  
D. P. Berry, P. J. S. Gore, J. A. S. Lancaster, and C. W. Holmes** .....3993

Erratum.....4004

**NOTICE: Page Charges for Publication**

The page charge per printed page is \$85 for professional members and \$140 for nonmembers for papers published in *Journal of Dairy Science*

**Future Annual Meetings**

**2008–July 7–11, Indianapolis, IN**

**2009–July 12–16, Montreal, Canada**

**2010–July 11–15, Denver, CO**

15 MAY 2008

## ORIGINAL ARTICLES

- G. DAL BELLO, C. MÓNACO, M. C. ROLLAN, G. LAMPUGNANI, N. ARTETA, C. ABRAMOFF, L. RONCO, M. STOCCO**  
Biocontrol of Postharvest Grey Mould on Tomato by Yeasts 257-263
- P. W. MASHELA, H. A. SHIMELIS, F. N. MUDAU**  
Comparison of the Efficacy of Ground Wild Cucumber Fruits, Aldicarb and Fenamiphos on Suppression of *Meloidogyne incognita* in Tomato 264-267
- K. YAMANE, K. OYAMA, E. IUCHI, H. OGAWA, T. SUZUKI, T. NATSUAKI**  
RT-PCR Detection of *Odontoglossum ringspot virus*, *Cymbidium mosaic virus* and Tospoviruses and Association of Infections with Leaf-Yellowing Symptoms in *Phalaenopsis* 268-273
- P. D. BRIDGE, J. M. WALLER, D. DAVIES, A. G. BUDDIE**  
Variability of *Colletotrichum kahawae* in Relation to Other *Colletotrichum* Species from Tropical Perennial Crops and the Development of Diagnostic Techniques 274-280
- A. FASSIHIANI, R. NEDAEINIA**  
Characterization of Iranian *Pectobacterium carotovorum* Strains from Sugar Beet by Phenotypic Tests and Whole-cell Proteins Profile 281-286
- A. R. SAADATMAND, Z. BANIHASHEMI, A. R. SEPASKHAH, M. MAFTOUN**  
Soil Salinity and Water Stress and Their Effect on Susceptibility to Verticillium Wilt Disease, Ion Composition and Growth of Pistachio 287-292
- C.-P. KUAN, M.-M. KUAN, M.-C. HSU, M.-L. LI**  
Rapid Detection by Genomic Amplification of Loofah Witches' Broom Phytoplasma in Leafhopper Vectors 293-296
- J.-P. PÉROS, G. BERGER, I. JAMAUX-DESPRÉAUX**  
Symptoms, Wood Lesions and Fungi Associated with Esca in Organic Vineyards in Languedoc-Roussillon (France) 297-303
- E. HANNA, M. DIGIARO, T. ELBEAINO, E. CHOUERI, J. JAWHAR, G. P. MARTELLI**  
Incidence of Viruses and Nematode Vectors in Lebanese Vineyards 304-310
- A. AL-MUSA, G. ANFOKA, S. MISBEH, M. ABHARY, F. H. AHMAD**  
Detection and Molecular Characterization of *Squash leaf curl virus* (SLCV) in Jordan 311-316
- A. IMAOKA, M. UENO, J. KIHARA, S. ARASE**  
Effect of Photosynthetic Inhibitors on Induction of Tryptamine Pathway-mediated Resistance in Lesion Mimic Mutant of Rice Infected with *Magnaporthe grisea* 317-320

15 MAY 2008



## CONTENTS

### Volume 78, Issue 3, 2008 (Published 5 January 2008)

- 153 Relationship between beef consumer tenderness perception and Warner Bratzler shear force  
G. DESTEFANIS, A. BRUGIAPAGLIA, M.T. BARGE, E. DAL MOLIN (Italy)
- 157 Fatty acid composition of *M. Longissimus dorsi* from Holstein Friesian steers of New Zealand and European/American descent and from Belgian Blue × Holstein Friesian steers, slaughtered at two weights/ages  
T. MORENO (Spain), M.G. KEANE, F. NOCI, A.P. MOLONEY (Ireland)
- 170 A second look at the influence of birth weight on carcass and meat quality in pigs  
C. REHFELDT, A. TUCHSCHERER, M. HARTUNG, G. KUHN (Germany)
- 176 A comparison of organic and conventionally-produced lamb purchased from three major UK supermarkets: Price, eating quality and fatty acid composition  
K.M. ANGOOD, J.D. WOOD, G.R. NUTE, F.M. WHITTINGTON, S.I. HUGHES, P.R. SHEARD (UK)
- 185 Carcass composition and yield of Alaskan reindeer (*Rangifer tarandus tarandus*) steers and effects of electrical stimulation applied during field slaughter on meat quality  
E. WIKLUND (New Zealand, USA), G. FINSTAD (USA), L. JOHANSSON (Sweden), G. AGUIAR, P.J. BECHTEL (USA)
- 194 Use of  $\gamma$ -irradiation to reduce *Clostridium perfringens* on ready-to-eat bovine tripe  
A. PARRY-HANSON, A. HALL, A. MINNAAR, E.M. BUYS (South Africa)
- 202 Effect of glycogen concentration and form on the response to electrical stimulation and rate of post-mortem glycolysis in ovine muscle  
D.M. FERGUSON, B.L. DALY, G.E. GARDNER, R.K. TUME (Australia)
- 211 Utilization of interesterified oil blends in the production of frankfurters  
E.B. ÖZVURAL, H. VURAL (Turkey)
- 217 The use of visible and near infrared reflectance spectroscopy to predict beef *M. longissimus thoracis et lumborum* quality attributes  
S. ANDRÉS (Spain), A. SILVA, A.L. SOARES-PEREIRA, C. MARTINS, A.M. BRUNO-SOARES (Portugal), I. MURRAY (UK)
- 225 Microbiological contamination of pig and cattle carcasses in different small-scale Swiss abattoirs  
C. ZWEIFEL, R. FISCHER, R. STEPHAN (Switzerland)
- 232 Association between animal, transportation, slaughterhouse practices, and meat pH in beef  
N. MACH, A. BACH, A. VELARDE, M. DEVANT (Spain)
- 239 Effect of dietary rosemary and  $\alpha$ -tocopheryl acetate on the oxidative stability of raw and cooked pork following oxidized linseed oil administration  
L. HAAK, K. RAES, S. VAN DYCK, S. DE SMET (Belgium)
- 248 Prediction of the fatty acid composition of beef by near infrared transmittance spectroscopy  
V. SIERRA, N. ALDAI, P. CASTRO, K. OSORO, A. COTO-MONTES, M. OLIVAN (Spain)
- 256 Effects of breed and a concentrate or grass silage diet on beef quality in cattle of 3 ages. I: Animal performance, carcass quality and muscle fatty acid composition  
H.E. WARREN, N.D. SCOLLAN, M. ENSER, S.I. HUGHES, R.I. RICHARDSON, J.D. WOOD (UK)
- 270 Effects of breed and a concentrate or grass silage diet on beef quality in cattle of 3 ages. II: Meat stability and flavour  
H.E. WARREN, N.D. SCOLLAN, G.R. NUTE, S.I. HUGHES, J.D. WOOD, R.I. RICHARDSON (UK)
- 279 Effect of stunning systems on meat quality of Manchego suckling lamb packed under modified atmospheres  
M.B. LINARES, R. BÓRNEZ, H. VERGARA (Spain)

Contents continued on inside back cover



ELSEVIER

## Contents continued from outside back cover

- 288 Effects of *Urtica dioica* and *Hibiscus sabdariffa* on the quality and safety of sucuk (Turkish dry-fermented sausage)  
S. KARABACAK, H. BOZKURT (Turkey)
- 297 Muscle proteome and meat eating qualities of *Longissimus thoracis* of "Blonde d'Aquitaine" young bulls: A central role of HSP27 isoforms  
M. MORZEL, C. TERLOUW, C. CHAMBON, D. MICOL, B. PICARD (France)
- 305 Determination of phospholipid molecular species in pork meat by high performance liquid chromatography–tandem mass spectrometry and evaporative light scattering detection  
E. BOSELLI, D. PACETTI, F. CURZI, N.G. FREGA (Italy)
- 314 Differentiation of European wild boar (*Sus scrofa scrofa*) and domestic swine (*Sus scrofa domestica*) meats by PCR analysis targeting the mitochondrial D-loop and the nuclear melanocortin receptor 1 (*MCR1*) genes  
V. FAJARDO, I. GONZÁLEZ, I. MARTÍN, M. ROJAS, P.E. HERNÁNDEZ, T. GARCÍA, R. MARTÍN (Spain)
- 323 Compound C, an inhibitor of AMP-activated protein kinase, inhibits glycolysis in mouse *longissimus dorsi* postmortem  
Q.W. SHEN, D.E. GERRARD, M. DU (USA)
- 331 Changes in L-carnitine content of fish and meat during domestic cooking  
C. RIGAUT, F. MAZUÉ, A. BERNARD, J. DEMARQUOY, F. LE BORGNE (France)
- 336 Quantification of zinc-porphyrin in dry-cured ham products by spectroscopic methods. Comparison of absorption, fluorescence and X-ray fluorescence spectroscopy  
K. LAURSEN, C.E. ADAMSEN, J. LAURSEN, K. OLSEN, J.K.S. MØLLER (Denmark)
- I AMSA membership: benefits & application



## CONTENTS

### Volume 78, Issue 4, 2008 (Published 1 February 2008)

- 343 Fat deposition, fatty acid composition and meat quality: A review  
J.D. WOOD, M. ENSER, A.V. FISHER, G.R. NUTE, P.R. SHEARD, R.I. RICHARDSON, S.I. HUGHES, F.M. WHITTINGTON (UK)
- 359 Improving ground beef safety and stabilizing color during irradiation using antioxidants, reductants or TSP  
D.Q. DUONG, P.G. CRANDALL, F.W. POHLMAN, C.A. O'BRYAN, C.W. BALENTINE, A. CASTILLO (USA)
- 369 Effect of muscle location, fiber direction, and slice thickness on the processing characteristics and tenderness of beef stir-fry strips from the round and chuck  
J.A. BOLES (USA), P.J. SHAND (Canada)
- 375 Changes in collagen, texture and sensory properties of meat when selecting rabbits for growth rate  
M. PASCUAL, M. PLA (Spain)
- 381 Use of starter cultures of dairy origin in the production of *Salame nostrano*, an Italian dry-cured sausage  
B.T. CENCI-GOGA, D. RANUCCI, D. MIRAGLIA, A. CIOFFI (Italy)
- 391 Quantitative analysis of pork dry-cured sausages to quality control by NIR spectroscopy  
A.J. GAITAN-JURADO, V. ORTIZ-SOMOVILLA, F. ESPAÑA-ESPAÑA, J. PÉREZ-APARICIO, E.J. DE PEDRO-SANZ (Spain)
- 400 Predicting the composition of lamb carcasses using alternative fat and muscle depth measures  
D.L. HOPKINS, E.N. PONNAMPALAM, R.D. WARNER (Australia)
- 406 Low-fat sodium-reduced sausages: Effect of the interaction between locust bean gum, potato starch and  $\kappa$ -carrageenan by a mixture design approach  
E. GARCÍA-GARCÍA, A. TOTOSAUS (Mexico)
- 414 Microbiological quality of freshly shot game in Germany  
V. ATANASSOVA, J. APELT, F. REICH, G. KLEIN (Germany)
- 420 Influence of sex and terminal sire line on performance and carcass and meat quality of Iberian pigs reared under intensive production systems  
M.P. SERRANO, D.G. VALENCIA, M. NIETO, R. LÁZARO, G.G. MATEOS (Spain)
- 429 The influence of cooking rate and holding time on beef chuck and round flavor  
J.M. JAMES, C.R. CALKINS (USA)
- 438 Addition of grape seed extract and bearberry to porcine diets: Influence on quality attributes of raw and cooked pork  
M.N. O'GRADY, R. CARPENTER, P.B. LYNCH, N.M. O'BRIEN, J.P. KERRY (Ireland)
- 447 Effect of replacing beef fat with hazelnut oil on quality characteristics of sucuk – A Turkish fermented sausage  
G. YILDIZ-TURP, M. SERDAROĞLU (Turkey)
- 455 Comparisons of *longissimus* muscle metabolic enzymes and muscle fiber types in Korean and western pig breeds  
N.-K. KIM, J.-H. LIM, M.-J. SONG, O.-H. KIM, B.-Y. PARK, M.-J. KIM, I.-H. HWANG, C.-S. LEE (Republic of Korea)
- 461 Antioxidant effect of Cassia essential oil on deep-fried beef during the frying process  
H. DU, H. LI (PR China)
- 469 Effect of silk flower hay (*Calotropis procera* Sw) feeding on the physical and chemical quality of *Longissimus dorsi* muscle of Santa Inez lambs  
M.S. MADRUGA, R.G. COSTA, A.M. SILVA, A.V.M.S. MARQUES, R.N. CAVALCANTI, N. NARAIN, C.L.C. ALBUQUERQUE, G.E. LIRA FILHO (Brazil)
- 475 Characterisation of microbial deep spoilage in Iberian dry-cured ham  
A. MARTÍN, M.J. BENITO, A. HERNÁNDEZ, F. PÉREZ-NEVADO, J.J. CÓRDOBA, M.G. CÓRDOBA (Spain)

Contents continued on inside back cover



**Contents continued from outside back cover**

- 485 Effect of genetic rabbit lines on lipid content, lipolytic activities and fatty acid composition of hind leg meat and perirenal fat  
P. HERNÁNDEZ, V. CESARI, A. BLASCO (Spain)
- 492 Colour formation in fermented sausages by meat-associated staphylococci with different nitrite- and nitrate-reductase activities  
J. GØTTERUP, K. OLSEN, S. KNØCHEL, K. TJEFNER, L.H. STAHNKE, J.K.S. MØLLER (Denmark)
- 502 Muscle fiber and fatty acid profiles of Mertolenga-PDO meat  
P. COSTA, L.C. ROSEIRO, R.J.B. BESSA, M. PADILHA, A. PARTIDÁRIO, J. MARQUES DE ALMEIDA (Portugal), C.R. CALKINS (USA), C. SANTOS (Portugal)
- 513 Screening for anti-listerial bacteriocin-producing lactic acid bacteria from "Gueddid" a traditionally Tunisian fermented meat  
Z. BEN BELGACEM, M. FERCHICHI (Tunisia), H. PRÉVOST, X. DOUSSET (France), M. MANAI (Tunisia)
- 522 Effect of processing on functional properties of animal blood plasma  
P. DEL HOYO, M. RENDUELES, M. DÍAZ (Spain)
- 529 Sodium lactate influences myoglobin redox stability in vitro  
R.A. MANCINI, R. RAMANATHAN (USA)
- I AMSA membership: benefits & application



## CONTENTS

### Volume 79, Issue 1, 2008 (Published 1 March 2007)

- 1 Development of shelf stable pork sausages using hurdle technology and their quality at ambient temperature ( $37 \pm 1$  °C) storage  
R. THOMAS, A.S.R. ANJANEYULU, N. KONDAIAH (India)
- 13 Effect of enhancement and ageing on flavor and volatile compounds in various beef muscles  
A.J. STETZER, K. CADWALLADER, T.K. SINGH, F.K. MCKEITH, M.S. BREWER (USA)
- 20 Meat quality of Nguni, Bonsmara and Aberdeen Angus steers raised on natural pasture in the Eastern Cape, South Africa  
V. MUCHENJE (South Africa, Zimbabwe), K. DZAMA, M. CHIMONYO, J.G. RAATS, P.E. STRYDOM (South Africa)
- 29 Effect of the inoculation of a starter culture and vacuum packaging (during resting stage) on the appearance and some microbiological and physicochemical parameters of dry-cured ham  
F. SÁNCHEZ-MOLINERO, J. ARNAU (Spain)
- 39 Proteolysis in *biceps femoris* during Jinhua ham processing  
G.M. ZHAO, W. TIAN, Y.X. LIU, G.H. ZHOU, X.L. XU, M.Y. LI (PR China)
- 46 Progress in reducing the pale, soft and exudative (PSE) problem in pork and poultry meat  
S. BARBUT (Canada), A.A. SOSNICKI, S.M. LONERGAN, T. KNAPP, D.C. CIOBANU (USA), L.J. GATCLIFFE (UK), E. HUFF-LONERGAN, E.W. WILSON (USA)
- 64 Effects of temperature conditioning on postmortem changes in physico-chemical properties in Korean native cattle (Hanwoo)  
L.H. YU, D.G. LIM, S.G. JEONG, T.S. IN, J.H. KIM, C.N. AHN, C.J. KIM, B.Y. PARK (Republic of Korea)
- 71 Effect of exercise on skeletal muscle proteolytic enzyme activity and meat quality characteristics in Iberian pigs  
C.J. LOPEZ-BOTE, F. TOLDRÁ, A. DAZA, J.M. FERRER, D. MENOYO, L. SILIÓ, M.C. RODRÍGUEZ (Spain)
- 77 *In vitro* study to evaluate the degradation of bovine muscle proteins *post-mortem* by proteasome and  $\mu$ -calpain  
M.B. HOUBAK, P. ERTBJERG, M. THERKILDSEN (Denmark)
- 86 Energy supply patterns for finishing steers: Feed conversion efficiency, components of bodyweight gain and meat quality  
A.P. MOLONEY, M.G. KEANE, M.T. MOONEY (Ireland), K. REZEK, F.J.M. SMULDERS (Austria), D.J. TROY (Ireland)
- 98 Eating quality of young bulls from three Spanish beef breed-production systems and its relationships with chemical and instrumental meat quality  
X. SERRA, L. GUERRERO, M.D. GUÀRDIA, M. GIL, C. SAÑUDO, B. PANEA, M.M. CAMPO, J.L. OLLETA, M.D. GARCÍA-CACHÁN, J. PIEDRAFITA, M.A. OLIVER (Spain)
- 105 Muscularity and eating quality of lambs: Effects of breed, sex and selection of sires using muscularity measurements by computed tomography  
E.A. NAVAJAS, N.R. LAMBE, A.V. FISHER, G.R. NUTE, L. BÜNGER, G. SIMM (UK)
- 113 Muslim consumer trust in halal meat status and control in Belgium  
K. BONNE, W. VERBEKE (Belgium)
- 124 Water-soluble precursors of beef flavour: I. Effect of diet and breed  
G. KOUTSIDIS, J.S. ELMORE, M.J. ORUNA-CONCHA, M.M. CAMPO, J.D. WOOD, D.S. MOTTRAM (UK)
- 131 A comparison of the physicochemical and sensory characteristics of *alheira* samples from different-sized producers  
L. PATARATA, I. JUDAS, J.A. SILVA, A. ESTEVES, C. MARTINS (Portugal)
- 139 Development and validation of a probabilistic second-order exposure assessment model for *Escherichia coli* O157:H7 contamination of beef trimmings from Irish meat plants  
E. CUMMINS, P. NALLY, F. BUTLER, G. DUFFY, S. O'BRIEN (Ireland)

Contents continued on inside back cover



ELSEVIER

**Contents continued from outside back cover**

- 155 Biomechanical and microbiological changes in natural hog casings treated with ozone  
H. BENLI, B.S. HAFLEY, J.T. KEETON, L.M. LUCIA, E. CABRERA-DIAZ, G.R. ACUFF (USA)
- 163 The effects of broiler catching method on breast meat quality  
M.W. SCHILLING, V. RADHAKRISHNAN, Y.V. THAXTON, K. CHRISTENSEN, J.P. THAXTON, V. JACKSON  
(USA)
- 172 Analysis of volatile compounds of Iberian dry-cured loins with different intramuscular fat contents using SPME-DED  
S. VENTANAS, M. ESTEVEZ, A.I. ANDRÉS, J. RUIZ (Spain)
- 181 Distributions of brine and bacteria in beef primal cuts injected with brine without, or before or after mechanical tenderizing  
C.O. GILL, B. UTTARO, M. BADONI, S. ZAWADSKI (Canada)
- 188 Effect of carrageenan level and packaging during ripening on processing and quality characteristics of low-fat fermented  
sausages produced with olive oil  
D.A. KOUTSOPOULOS, G.E. KOUTSIMANIS, J.G. BLOUKAS (Greece)
- 198 Discrimination of adult steers (oxen) and young cattle ground meat samples by near infrared reflectance spectroscopy  
(NIRS)  
N. PRIETO, S. ANDRÉS, F.J. GIRÁLDEZ, A.R. MANTECÓN, P. LAVÍN (Spain)
- I AMSA membership: benefits & application





/ 8 MAYO 2008

CONTENIDOS

Es una publicación de NAI Ltd.,  
newag@newaginternational.com  
www.newaginternational.com/es/

**Directores:**

Jean-Pierre Leymonie, Bruce Neale,  
Andrew Osborne, Ralph Thawley.

**Director Editorial:**

JP Leymonie  
Email: editorial@newaginternational.com

**Editor:**

Patricio Trebilcock  
José Arrieta 85  
(Sector Parque Bustamante)  
Providencia, Santiago, Chile  
Tel: +56 2 665 03 90  
Fax: +56 2 665 03 89  
Mob: +56 99 1630327  
Email: newagspanish@gmail.com

**Periodistas:**

Juan Pablo Figueroa  
Email: Figueroa.juanpablo@gmail.com

**Sección Protección de los Cultivos:**

Marianne Loison  
Email: m.loison@wanadoo.fr

**Director de Ventas, Publicidad y Marketing:**

A. Osborne  
1st Floor, 2-4 Heath Road  
Twickenham  
Middlesex TW1 4BZ  
United Kingdom  
Email:  
advertising@newaginternational.com

Se publica cuatro veces al año. Se pueden obtener reimpresiones de los avisos solicitándolo al Editor. Todos los derechos reservados. Ninguna parte de esta publicación puede ser reproducida, almacenada en un sistema digital o transmitida de ninguna forma- electrónica, mecánica, fotocopia, grabación- sin la previa autorización por escrito del dueño de los Derechos. © 2006 NAI Ltd

**Consultas sobre suscripción:**

Fax: +44(0) 208 744 1705  
Email: newag@newaginternational.com

Suscripción anual: US\$95  
El formulario de suscripción está disponible en:  
www.newaginternational.com/es/

**Diseñado en Chile por:**

Ezio Mosciatti Diseño & Arquitectura.  
Marcos Alonso Q.  
José Arrieta 85, Providencia, Santiago.  
Tel: +56 2 6651603  
Fax: +56 2 6650389

New Ag International no se hace responsable por la veracidad y exactitud de la información entregada por los colaboradores, auspiciadores o agencias de publicidad.

# NEW INTERNATIONAL

ABRIL 2008

en español

abril 2008

## NOTICIAS

Las principales noticias de la industria de los fertilizantes de especialidad, riego e invernaderos.

## PROVEEDORES

Nuevos productos, nuevas tecnologías, nuevas publicaciones.

## PROTECCIÓN DE LOS CULTIVOS

Resistencia inducida: Un concepto en crecimiento en protección vegetal  
La página de la IBMA

## PRODUCTOS Y TENDENCIAS

¿Cómo funcionan los productos para raíces?

## EQUIPOS Y TECNOLOGÍA DE RIEGO

Página de la Irrigation Association  
Planeta Pivotes: La revolución circular del riego

Bioteología Vegetal: Buscando cultivos tolerantes a la sequía

## INFORME REGIONAL

Temporada de Ferias en México  
Agricultura High Tech en Chile

## DIRECTORIO WEB



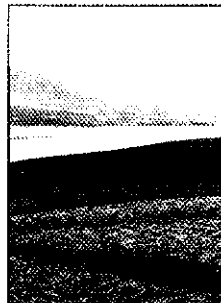
ES. NUBELZA RA



ES. NUBELZA RA



ES. NUBELZA RA



ES. NUBELZA RA



18 MAYO 2008

CONTENTS

Forum

Commentary

- 569 • **Environment:** Selenium and the elemental defense hypothesis • **Interaction:** Fungal fidelity in the myco-heterotroph-to-autotroph life cycle of Lycopodiaceae: a case of parental nurture? • **Evolution:** Predicting evolutionary consequences of pollinator declines: the long and short of floral evolution

Letters

- 579 The observer effect in plant science  
583 Two allopolyploid ascomycete fungal plant pathogens were not rescued by vertical transmission

Meetings

- 586 Fungal networks made of humans: UNITE, FESIN, and frontiers in fungal ecology

Review

Tansley reviews

- 589 Genes for control of plant stature and form  
*V. B. Busov, A. M. Brunner & S. H. Strauss*  
608 Structure and function of bordered pits: new discoveries and impacts on whole-plant hydraulic function  
*B. Choat, A. R. Cobb & S. Jansen*

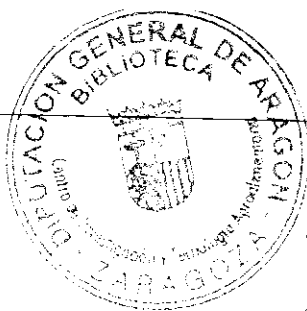
Research

Full papers

- 627 HAG2/MYB76 and HAG3/MYB29 exert a specific and coordinated control on the regulation of aliphatic glucosinolate biosynthesis in *Arabidopsis thaliana*  
*T. Gigolashvili, M. Engqvist, R. Yatsuevich, C. Müller & U.-I. Flugge*  
643 Mechanical role of the leaf sheath in rattans  
*S. Isnard & N. P. Rowe*  
653 Tapering of xylem conduits and hydraulic limitations in sycamore (*Acer pseudoplatanus*) trees  
*G. Petit, T. Anfodillo & M. Mencuccini*  
665 Xylem hydraulic and photosynthetic function of *Gnetum* (Gnetales) species from Papua New Guinea  
*T. S. Feild & L. Balun*  
676 Two independent estimations of stand-level root respiration on clonal *Eucalyptus* stands in Congo: up scaling of direct measurements on roots versus the trenched-plot technique  
*C. Marsden, Y. Nouvellon, A. T. M'Bou, L. Saint-Andre, C. Jourdan, A. Kinana & D. Epron*  
688 Height convergence in response to neighbour growth: genotypic differences in the stoloniferous plant *Potentilla reptans*  
*P. J. Vermeulen, N. P. R. Anten, F. Schieving, M. J. A. Werger & H. J. During*  
698 Small differences in arrival time influence composition and productivity of plant communities  
*C. Körner, J. Stöcklin, L. Reuther-Thiébaud & S. Pelaez-Riedl*  
706 Altered ecosystem carbon and nitrogen cycles by plant invasion: a meta-analysis  
*C. Liao, R. Peng, Y. Luo, X. Zhou, X. Wu, C. Fang, J. Chen & B. Li*  
715 Selenium hyperaccumulation reduces plant arthropod loads in the field  
*M. I. Galeas, E. M. Klumper, L. E. Bennett, J. L. Freeman, B. C. Kondratieff, C. F. Quinn & E. A. H. Pilon-Smits*  
• **Commentary p 569**

- 725 Natural genetic resources of *Arabidopsis thaliana* reveal a high prevalence and unexpected phenotypic plasticity of *RPW8*-mediated powdery mildew resistance  
*K. Göllner, P. Schweizer, Y. Bai & R. Panstruga*  
743 Isolate specificity of quantitative trait loci for partial resistance of barley to *Puccinia hordei* confirmed in mapping populations and near-isogenic lines  
*T. C. Marcel, B. Gorguet, M. T. Tu, Z. Kobutova, A. Vels & R. E. Niks*  
756 Susceptibility to *Phytophthora ramorum* in a key infectious host: landscape variation in host genotype, host phenotype, and environmental factors  
*B. L. Anacker, N. E. Rank, D. Hübeli, M. Garbelotto, S. Gordon, T. Harnik, R. Whitkus & R. Meentemeyer*  
767 Systemic induction of phloem secondary metabolism and its relationship to resistance to a canker pathogen in Austrian pine  
*C. Wallis, A. Eyles, R. Chorbadjan, B. McSpadden Gardner, R. Hansen, D. Cipollini, D. A. Herms & P. Bonello*  
779 Are there benefits of simultaneous root colonization by different arbuscular mycorrhizal fungi?  
*J. Jansa, F. A. Smith & S. E. Smith*  
790 Arbuscular mycorrhizal associations in Lycopodiaceae  
*J. L. Winther & W. E. Friedman*  
• **Commentary p 572**  
802 Pollen limitation and natural selection on floral characters in the yellow monkeyflower, *Mimulus guttatus*  
*L. Fishman & J. H. Willis*  
• **Commentary p 576**
- Methods
- 811 Spatio-temporal quantification of differential growth processes in root growth zones based on a novel combination of image sequence processing and refined concepts describing curvature production  
*A. Chavarría-Krauser, K. A. Nagel, K. Patne, U. Schurr, A. Walter & H. Schurr*  
822 New tools for labeling silica in living diatoms  
*J. Desclès, M. Varanian, A. El Harrak, M. Quinet, N. Bremond, G. Sapriel, J. Bibene & P. J. Lopez*  
830 Novel way of measuring the fracture toughness of leaves and other thin films using a single inclined razor blade  
*K. Y. Ang, P. W. Lucas & H. T. W. Tan*

- *New Phytologist* is owned by a non-profit-making **charitable trust** dedicated to the promotion of plant science, facilitating projects from symposia to open access for our Tansley reviews. Complete information is available at [www.newphytologist.org](http://www.newphytologist.org).
- Regular papers, Letters, Research reviews, Rapid reports and both Modelling/Theory and Methods papers are encouraged. We are committed to rapid processing, from online submission through to publication 'as-ready' via *OnlineEarly*. Online-only colour is **free**, and we provide 25 offprints as well as a PDF for each article.
- For online summaries and ToC alerts, go to the website and click on 'Journal online'. You can take out a **personal subscription** to the journal for a fraction of the institutional price. Rates start at £135 in Europe/\$251 in the USA & Canada for the online edition (click on 'Subscribe' at the website).
- If you have any questions, do get in touch with Central Office ([newphytol@lancaster.ac.uk](mailto:newphytol@lancaster.ac.uk); tel +44 1524 594691) or, for a local contact in North America, the US Office ([newphytol@ornl.gov](mailto:newphytol@ornl.gov); tel +1 865 576 5261). See our *Concise Author Guidelines* inside the back cover of this issue for further details.



CONTENTS

Forum

Editorial

839 Orchestrating morphogenesis in mycorrhizal symbioses

Commentary

841 • **Environment:** Not drowning but photosynthesizing: probing plant plastons • **Interaction:** Missing links –  $\delta^{13}\text{C}$  anomalies between substrates and consumers

Review

Tansley reviews

849 Conflict, cheats and the persistence of symbioses  
*A. E. Douglas*

859 Bacterial mycophagy: definition and diagnosis of a unique bacterial–fungal interaction  
*J. H. J. Leveau & G. M. Preston*

Research reviews

877 Laticifers and secretory ducts: two other tube systems in plants  
*W. F. Pickard*

Research

Full papers

889 Functional analysis of the Arabidopsis PHT4 family of intracellular phosphate transporters  
*B. Guo, Y. Jin, C. Wussler, E. B. Blancaflor, C. M. Motes & W. K. Versaw*

899 Glyphosate inhibition of ferric reductase activity in iron deficient sunflower roots  
*L. Öztürk, A. Yazıcı, S. Eker, O. Gökmen, V. Römheld & I. Cakmak*

907 Phenotypic plasticity in response to mechanical stress: hydrodynamic performance and fitness of four aquatic plant species  
*S. Puijalón, J.-P. Lénu, N. Rivière, J.-Y. Champagne, J.-C. Rosan & G. Bornette*

918 Underwater photosynthesis and respiration in leaves of submerged wetland plants: gas films improve  $\text{CO}_2$  and  $\text{O}_2$  exchange  
*T. D. Colmer & O. Pedersen*  
• **Commentary p 841**

927 Water-use efficiency of forest ecosystems in eastern China and its relations to climatic variables  
*G. Yu, X. Song, Q. Wang, Y. Liu, D. Guan, J. Yan, X. Sun, L. Zhang & X. Wen*

938 Recurrent soil freeze–thaw cycles enhance grassland productivity  
*J. Kreyling, C. Beierkuhnlein, K. Pritsch, M. Schlöter & A. Jentsch*

946 Quantifying foliar uptake of gaseous nitrogen dioxide using enriched foliar  $\delta^{15}\text{N}$  values  
*D. M. Vallano & J. P. Sparks*

956 Organic acid accumulation may inhibit  $\text{N}_2$  fixation in phosphorus-stressed lupin nodules  
*M. R. Le Roux, S. Khan & A. J. Valentine*

965 Root inoculation with a forest soil streptomycete leads to locally and systemically increased resistance against phytopathogens in Norway spruce  
*N.-A. Lebr, S. D. Schrey, R. Hampp & M. T. Turkka*

977 *Capsicum annuum* WRKY protein CaWRKY1 is a negative regulator of pathogen defense  
*S.-K. Oh, K.-H. Bae, J. M. Park, S. Y. Yi, S. H. Yu, S. Kamoun & D. Choi*

990 *Fusarium graminearum* gene deletion mutants *map1* and *tr5* reveal similarities and differences in the pathogenicity requirements to cause disease on Arabidopsis and wheat floral tissue  
*A. Cuzick, M. Urban & K. Hammond-Kosack*

1001 Autoinfection in wheat leaf rust epidemics  
*C. Lannou, S. Soubeyrand, L. Frezal & J. Chadouf*

1012 Can isotopic fractionation during respiration explain the  $^{13}\text{C}$ -enriched sporocarps of ectomycorrhizal and saprotrophic fungi?  
*B. Bostrom, D. Comstedt & A. Ekblad*  
• **Commentary p 845**

Methods

1020 Internal transcribed spacer primers and sequences for improved characterization of basidiomycetous orchid mycorrhizas  
*D. I. Taylor & M. K. McCormick*

1034 Addendum

- *New Phytologist* is owned by a non-profit-making charitable trust dedicated to the promotion of plant science, facilitating projects from symposia to open access for our Tansley reviews. Complete information is available at [www.newphytologist.org](http://www.newphytologist.org).
- Regular papers, Letters, Research reviews, Rapid reports and both Modelling/Theory and Methods papers are encouraged. We are committed to rapid processing, from online submission through to publication 'as-ready' via *OnlineEarly*. Online-only colour is free, and we provide 25 offprints as well as a PDF for each article.
- For online summaries and ToC alerts, go to the website and click on 'Journal online'. You can take out a **personal subscription** to the journal for a fraction of the institutional price. Rates start at £135 in Europe/\$251 in the USA & Canada for the online edition (click on 'Subscribe' at the website).
- If you have any questions, do get in touch with Central Office ([newphytol@lancaster.ac.uk](mailto:newphytol@lancaster.ac.uk); tel +44 1524 594691) or, for a local contact in North America, the US Office ([newphytol@ornl.gov](mailto:newphytol@ornl.gov); tel +1 865 576 5261). See our *Concise Author Guidelines* inside the back cover of this issue for further details.



18 MAYO 2008

CONTENTS

Forum

Commentary

- 1 • **Evolution:** Constraints on the evolution and geographical range of *Pinus*

Letters

- 3 Out of the rivers: are some aquatic hyphomycetes plant endophytes?

Review

Tansley reviews

- 9 Influence of environmental factors on stomatal development  
*S. Casson & J. E. Gray*
- 24 Carbon isotopes in terrestrial ecosystem pools and CO<sub>2</sub> fluxes  
*D. R. Bowling, D. E. Pataki & J. T. Randerson*
- 41 Indirect defence via tritrophic interactions  
*M. Heil*

Research

Rapid reports

- 63 Elevated CO<sub>2</sub> influences the expression of floral-initiation genes in *Arabidopsis thaliana*  
*C. J. Springer, R. A. Orozco, J. K. Kelly & J. K. Ward*

Full papers

- 68 Abscisic acid regulates gene expression in cortical fiber cells and silica cells of rice shoots  
*Z.-S. Shobbar, R. Oane, R. Gamuyao, J. De Palma, M. A. Malboobi, G. Karimzadeh, M. J. Javaran & J. Bennett*
- 80 Ectopic expression of *GmPAP3* alleviates oxidative damage caused by salinity and osmotic stresses  
*W.-Y. F. Li, G. Shao & H.-M. Lam*
- 92 Selenium uptake, translocation and speciation in wheat supplied with selenate or selenite  
*H.-F. Li, S. P. McGrath & F.-J. Zhao*
- 103 Global monitoring of autumn gene expression within and among phenotypically divergent populations of Sitka spruce (*Picea sitchensis*)  
*J. A. Holliday, S. G. Ralph, R. White, J. Bohlmann & S. N. Aitken*
- 123 Thermal acclimation of leaf respiration but not photosynthesis in *Populus deltoides* × *nigra*  
*L. F. Ow, K. L. Griffin, D. Whitehead, A. S. Walcroft & M. H. Turnbull*
- 135 Types, structure and potential for axial water flow in the deepest roots of field-grown cereals  
*M. Watt, L. J. Magee & M. E. McCully*

- 147 Effects of host plant environment and *Ustilago maydis* infection on the fungal endophyte community of maize (*Zea mays*)  
*J. J. Pan, A. M. Baumgarten & G. May*
- 157 Resistance to *Striga hermonitica* in a maize inbred line derived from *Zea diploperennis*  
*I. O. Amusan, P. J. Rich, A. Meukir, T. Housley & G. Ejeta*
- 167 Contrasting ectomycorrhizal fungal communities on the roots of co-occurring oaks (*Quercus* spp.) in a California woodland  
*M. H. Morris, M. E. Smith, D. M. Rizzo, M. Rejmanek & C. S. Bledsoe*
- 177 Proton (H<sup>+</sup>) flux signature for the presymbiotic development of the arbuscular mycorrhizal fungi  
*A. C. Ramos, A. R. Façanha & J. A. Feijó*
- 189 Ultrastructure of rapidly frozen and freeze-substituted germ tubes of an arbuscular mycorrhizal fungus and localization of polyphosphate  
*Y. Kuga, K. Saito, K. Nayuki, R. L. Peterson & M. Saito*
- 201 Evolutionary significance of a flat-leaved *Pinus* in Vietnamese rainforest  
*T. J. Brodribb & T. S. Feild*
- **Commentary p 1**
- 210 Selfed embryo death in *Pinus taeda*: a phenotypic profile  
*C. G. Williams*

- *New Phytologist* is owned by a non-profit-making **charitable trust** dedicated to the promotion of plant science, facilitating projects from symposia to open access for our Tansley reviews. Complete information is available at [www.newphytologist.org](http://www.newphytologist.org).
- Regular papers, Letters, Research reviews, Rapid reports and both Modelling/Theory and Methods papers are encouraged. We are committed to rapid processing, from online submission through to publication 'as-ready' via *OnlineEarly*. Online-only colour is **free**, and we provide 25 offprints as well as a PDF for each article.
- For online summaries and ToC alerts, go to the website and click on 'Journal online'. You can take out a **personal subscription** to the journal for a fraction of the institutional price. Rates start at £135 in Europe/\$251 in the USA & Canada for the online edition (click on 'Subscribe' at the website).
- If you have any questions, do get in touch with Central Office ([newphytol@lancaster.ac.uk](mailto:newphytol@lancaster.ac.uk); tel +44 1524 594691) or, for a local contact in North America, the US Office ([newphytol@ornl.gov](mailto:newphytol@ornl.gov); tel +1 865 576 5261). See our *Concise Author Guidelines* inside the back cover of this issue for further details.



8 MAYO 2008

CONTENTS

Forum

Commentary

- 223 • **Environment:** Soil depth, plant rooting strategies and species' niches • **Interaction:** Fungal sex as a private matter: odour signals in a specialized pollination-like insect–fungus mutualism • **Evolution:** To the edge: studies of species' range limits

Letters

- 230 Ectomycorrhizal fungi and the biotrophy–saprotrophy continuum  
233 Mycorrhizal status of native trees and shrubs from eastern Madagascar littoral forests with special emphasis on one new ectomycorrhizal endemic family, the Asteropiaceae

Review

Tansley reviews

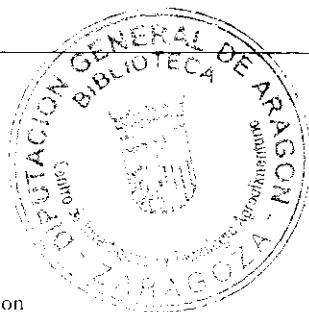
- 239 Cellulose biosynthesis and deposition in higher plants  
*N. G. Taylor*  
253 Communities, populations and individuals of arbuscular mycorrhizal fungi  
*S. Rosendahl*

Research

Full papers

- 267 Phospholipase C signaling involvement in microtubule assembly and activation of the mechanism regulating protoplast volume in plasmolyzed root cells of *Triticum turgidum*  
*G. Komis, B. Galatis, H. Quader, D. Galanopoulou & P. Apostolatos*  
283 Molecular and phenotypic profiling from the base to the crown in maritime pine wood-forming tissue  
*J. A. P. Paiva, M. Garcés, A. Alves, P. Garnier-Géré, J. C. Rodrigues, C. Lalanne, S. Poucon, G. Le Provost, D. da Silva Perez, J. Brach, J.-M. Frigerio, S. Claverol, A. Barré, P. Fevereiro & C. Plomion*  
302 Dissecting apple tree architecture into genetic, ontogenetic and environmental effects: mixed linear modelling of repeated spatial and temporal measures  
*V. Segura, C. Cilas & E. Costes*  
315 Variation in root-to-shoot translocation of cadmium and zinc among different accessions of the hyperaccumulators *Thlaspi caerulescens* and *Thlaspi praecox*  
*J. P. Xing, R. F. Jiang, D. Ueno, J. F. Ma, H. Schar, S. P. McGrath & F. J. Zhao*  
326 Oxygen dynamics in submerged rice (*Oryza sativa*)  
*T. D. Colmer & O. Pedersen*  
335 Photosynthesis can be enhanced by lateral CO<sub>2</sub> diffusion inside leaves over distances of several millimeters  
*R. Pieruschka, A. Chavarria-Krauser, K. Cloos, H. Scharr, U. Schurr & S. Jahnke*  
348 In field-grown coffee trees source–sink manipulation alters photosynthetic rates, independently of carbon metabolism, via alterations in stomatal function  
*F. M. DaMatta, R. L. Cunha, W. C. Antunes, S. C. V. Martins, W. L. Araújo, A. R. Fernie & G. A. B. K. Moraes*  
358 Yield and spatial supply of bioenergy poplar and willow short-rotation coppice in the UK  
*M. J. Aylott, E. Casella, I. Tubby, N. R. Street, P. Smith & G. Taylor*

- 371 Shallow-soil endemics: adaptive advantages and constraints of a specialized root-system morphology  
*P. Poort & H. Lambers*  
• **Commentary p 223**  
382 Hydraulic redistribution of water from *Pinus ponderosa* trees to seedlings: evidence for an ectomycorrhizal pathway  
*J. M. Warren, J. R. Brooks, F. C. Meinzer & J. L. Eberhart*  
395 The ectomycorrhizal specialist orchid *Covallorhiza trifida* is a partial myco-heterotroph  
*K. Zimmer, C. Meyer & G. Gebauer*  
401 Role of odour compounds in the attraction of gamete vectors in endophytic *Epichloë* fungi  
*F. Steinebrunner, R. Twele, W. Francke, A. Leuchtman & F. P. Schiestl*  
• **Commentary p 225**  
412 Inference of allelopathy is complicated by effects of activated carbon on plant growth  
*J. A. Lau, K. P. Puliafico, J. A. Kopshever, H. Steltzer, E. P. Jarvis, M. Schwarzländer, S. Y. Sraus & R. A. Huffbauer*  
424 Increased seed dispersal potential towards geographic range limits in a Pacific coast dune plant  
*E. Darling, K. E. Samis & C. G. Eckert*  
• **Commentary p 228**  
436 Genome-wide association to fine-scale ecological heterogeneity within a continuous population of *Biscutella laevigata* (Brassicaceae)  
*C. Parisod & P.-A. Christin*  
448 Effects of inbred/outbred crosses on progeny sex ratio in *Silene latifolia* (Caryophyllaceae)  
*S. Teixeira & G. Bernasconi*  
457 Corrigenda
- 
- *New Phytologist* is owned by a non-profit-making charitable trust dedicated to the promotion of plant science, facilitating projects from symposia to open access for our Tansley reviews. Complete information is available at [www.newphytologist.org](http://www.newphytologist.org).
  - Regular papers, Letters, Research reviews, Rapid reports and both Modelling/Theory and Methods papers are encouraged. We are committed to rapid processing, from online submission through to publication 'as-ready' via *OnlineEarly*. Online-only colour is free, and we provide 25 offprints as well as a PDF for each article.
  - For online summaries and ToC alerts, go to the website and click on 'Journal online'. You can take out a **personal subscription** to the journal for a fraction of the institutional price. Rates start at £135 in Europe/\$251 in the USA & Canada for the online edition (click on 'Subscribe' at the website).
  - If you have any questions, do get in touch with Central Office ([newphytol@lancaster.ac.uk](mailto:newphytol@lancaster.ac.uk); tel +44 1524 594691) or, for a local contact in North America, the US Office ([newphytol@ornl.gov](mailto:newphytol@ornl.gov); tel +1 865 576 5261). See our *Concise Author Guidelines* inside the back cover of this issue for further details.



8 MAYO 2008

CONTENTS

Forum

Editorial

461 Plant form and function

Commentary

462 • **Interaction:** Stealth tactics of galling parasites and their potential indirect effects • The genetic diversity of intraterrestrial aliens

Meetings

468 Whither plant evo-devo?

Review

Tansley reviews

473 Sustainable liquid biofuels from biomass: the writing's on the walls

*L. D. Gomez, C. G. Steele-King & S. J. McQueen-Mason*

486 Insect-damaged fossil leaves record food web response to ancient climate change and extinction

*P. Wilf*

Research reviews

503 Self/nonself perception and recognition mechanisms in plants: a comparison of self-incompatibility and innate immunity

*N. Sanabria, D. Goring, T. Nürnberger & I. Dubery*

Research

Full papers

515 Zeatin-induced nitric oxide (NO) biosynthesis in *Arabidopsis thaliana* mutants of NO biosynthesis and of two-component signaling genes

*N. N. Tun, M. Livaja, J. J. Kieber & G. F. E. Scherer*

532 Altered expression patterns of TCP and MYB genes relating to the floral developmental transition from initial zygomorphy to actinomorphy in *Bournea* (Gesneriaceae)

*X.-R. Zhou, Y.-Z. Wang, J. F. Smith & R. Chen*

544 The MIK region rather than the C-terminal domain of AP3-like class B floral homeotic proteins determines functional specificity in the development and evolution of petals

*K. Su, S. Zhao, H. Shan, H. Kong, W. Lu, G. Theissen, Z. Chen & Z. Meng*

559 Identifying genetic components controlling fertility in the outcrossing grass species perennial ryegrass (*Lolium perenne*) by quantitative trait loci analysis and comparative genetics

*I. P. Armstead, L. B. Turner, A. H. Marshall,*

*M. O. Humphreys, I. P. King & D. Thorogood*

572 Influencing the binding configuration of sucrose in the active sites of chicory fructan 1-exohydrolase and sugar beet fructan 6-exohydrolase

*K. Le Roy, W. Lammens, A. Van Laere & W. Van den Ende*

581 Characterization of root mucilage from *Melastoma malabathricum*, with emphasis on its roles in aluminum accumulation

*T. Watanabe, S. Misawa, S. Hiradate & M. Osaki*

590 Hydraulic and mechanical stem properties affect leaf-stem allometry in mango cultivars

*F. Normand, C. Bissery, G. Damour & P.-É. Lauri*

603 Physiology–phenology interactions in a productive semi-arid pine forest

*K. S. Maseyk, T. Lin, E. Rotenberg, J. M. Grünzweig, A. Schwartz & D. Yakir*

617 Does leaf shedding increase the whole-plant carbon gain despite some nitrogen being lost with shedding?

*S. Oikawa, K. Hikosaka & T. Hirose*

625 A fungal growth model fitted to carbon-limited dynamics of *Rhizoctonia solani*

*M. J. Jeger, A. Lamour, C. A. Gilligan & W. Otten*

634 Nitric oxide generation in *Vicia faba* phloem cells reveals them to be sensitive detectors as well as possible systemic transducers of stress signals

*F. Gaupels, A. C. U. Furch, T. Will, L. A. J. Mur, K.-H. Kogel & A. J. E. van Bel*

647 Ethylene production in plants during transformation suppresses *vir* gene expression in *Agrobacterium tumefaciens*

*S. Nonaka, K.-I. Yubashi, K. Takada, M. Sugawara, K. Minamisawa & H. Ezura*

657 Call insects can avoid and alter indirect plant defenses

*J. F. Tooker, J. R. Rohr, W. G. Abrahamson & C. M. De Moraes*

• **Commentary p 462**

672 Genetic diversity and host plant preferences revealed by simple sequence repeat and mitochondrial markers in a population of the arbuscular mycorrhizal fungus *Glomus intraradices*

*D. Croll, L. Wille, H. A. Gamper, N. Mathimaran, P. J. Lammers, N. Corradi & I. R. Sanders*

• **Commentary p 465**

688 Corrigenda

- *New Phytologist* is owned by a non-profit-making **charitable trust** dedicated to the promotion of plant science, facilitating projects from symposia to open access for our Tansley reviews. Complete information is available at [www.newphytologist.org](http://www.newphytologist.org).
- Regular papers, Letters, Research reviews, Rapid reports and both Modelling/Theory and Methods papers are encouraged. We are committed to rapid processing, from online submission through to publication 'as-ready' via *OnlineEarly*. Online-only colour is **free**, and we provide 25 offprints as well as a PDF for each article.
- For online summaries and ToC alerts, go to the website and click on 'Journal online'. You can take out a **personal subscription** to the journal for a fraction of the institutional price. Rates start at £135 in Europe/\$251 in the USA & Canada for the online edition (click on 'Subscribe' at the website).
- If you have any questions, do get in touch with Central Office ([newphytol@lancaster.ac.uk](mailto:newphytol@lancaster.ac.uk); tel +44 1524 594691) or, for a local contact in North America, the US Office ([newphytol@ornl.gov](mailto:newphytol@ornl.gov); tel +1 865 576 5261). See our *Concise Author Guidelines* inside the back cover of this issue for further details.

## Contents

### Original Articles

- 201 E. C. Donald, G. Jaudzems and I. J. Porter  
Pathology of cortical invasion by *Plasmiodiophora brassicae* in clubroot resistant and susceptible *Brassica oleracea* hosts
- 210 D. V. Shaw, J. Hansen, G. T. Browne and S. M. Shaw  
Components of genetic variation for resistance of strawberry to *Phytophthora cactorum* estimated using segregating seedling populations and their parent genotypes
- 216 V. Rossi, T. Caffi, R. Bugiani, F. Spanna and D. Della Valle  
Estimating the germination dynamics of *Plasmopara viticola* oospores using hydro-thermal time
- 227 A. Lehtinen, A. Hannukkala, B. Andersson, A. Hermansen, V. H. Le, R. Nærstad, M. B. Brurberg, B. J. Nielsen, J. G. Hansen and J. Yuen  
Phenotypic variation in Nordic populations of *Phytophthora infestans* in 2003
- 235 G. C. Hunter, N. A. van der Merwe, T. I. Burgess, A. J. Carnegie, B. D. Wingfield, P. W. Crous and M. J. Wingfield  
Global movement and population biology of *Mycosphaerella nubilosa* infecting leaves of cold-tolerant *Eucalyptus globulus* and *E. nitens*
- 243 Y. Seko, A. Bolay, L. Kiss, V. Heluta, B. Grigaliunaite and S. Takamatsu  
Molecular evidence in support of recent migration of a powdery mildew fungus on *Syringa* spp. into Europe from East Asia
- 251 O. A. Akinsanmi, D. Backhouse, S. Simpfendorfer and S. Chakraborty  
Mycelial compatibility reactions of Australian *Fusarium graminearum* and *F. pseudograminearum* isolates compared with AFLP groupings
- 262 J. C. Peters, A. K. Lees, D. W. Cullen, L. Sullivan, G. P. Stroud and A. C. Cunningham  
Characterization of *Fusarium* spp. responsible for causing dry rot of potato in Great Britain
- 272 H. De Silva, S. Green and S. Woodward  
Incidence and severity of dieback in birch plantings associated with *Anisogramma virgultorum* and *Marssonina betulae* in Scotland
- 280 B. Naseri, J. A. Davidson and E. S. Scott  
Survival of *Leptosphaeria maculans* and associated mycobiota on oilseed rape stubble buried in soil
- 290 A. Inman, H. A. Magnus, L. Riccioni, K. Hughes, M. Coates, A. Barnes, V. Barton, C. Sansford, M. Valvassori, G. Di Giambattista, A. Porta-Puglia, J. Razzaghian and G. Peterson  
Survival of *Tilletia indica* teliospores under European soil conditions
- 301 B. A. Kazi, R. W. Emmett, N. Nancarrow and D. L. Partington  
Berry infection and the development of bunch rot in grapes caused by *Aspergillus carbonarius*
- 308 C. Poza-Carrión, I. Aguilar, F. J. Gallego, Y. Nuñez-Moreno, E. G. Biosca, R. González, M. M. López and P. Rodríguez-Palenzuela  
*Brenneria quercina* and *Serratia* spp. isolated from Spanish oak trees: molecular characterization and development of PCR primers

Contents continued on inside back cover

Information on this journal can be accessed at: <http://www.blackwellpublishing.com/ppa>

This journal is covered by *Current Contents*, *Elsevier BIOBASE/Current Awareness in Biological Sciences*, *SCA*, *Scopus* and *Science Citation Index*.

 **WILEY-BLACKWELL**

This journal is available online at Blackwell Synergy. Visit [www.blackwell-synergy.com](http://www.blackwell-synergy.com) to search the articles and register for table of contents email alerts.

Front cover: Barley flag leaves with severe leaf-spotting caused by *Ramularia collo-cygni*. See Makepeace *et al.*, 56, 934–942. Courtesy of Simon Oxley, copyright SAC.

Typeset in Hong Kong by Graphicraft. Printed in Singapore by Ho Printing Pte Ltd.

## Contents continued from outside back cover

- 320 A. Sanchez Perez, L. Mejía, M. Fegan and C. Allen  
Diversity and distribution of *Ralstonia solanacearum* strains in Guatemala and rare occurrence of tomato fruit infection
- 332 L. X. Luo, C. Walters, H. Bolkan, X. L. Liu and J. Q. Li  
Quantification of viable cells of *Clavibacter michiganensis* subsp. *michiganensis* using a DNA binding dye and a real-time PCR assay
- 338 Q. C. Wang and J. P. T. Valkonen  
Efficient elimination of sweetpotato little leaf phytoplasma from sweetpotato by cryotherapy of shoot tips
- 348 T. Kapari-Isaia, A. Kyriakou, I. Papayiannis, D. Tsaltas, S. Gregoriou and I. Psaltis  
Rapid *in vitro* microindexing of viroids in citrus
- 354 D. J. Bailey, G. L. Biran, B. R. Kerry and C. A. Gilligan  
Pathozone dynamics of *Meloidogyne incognita* in the rhizosphere of tomato plants in the presence and absence of the nematophagous fungus, *Pochonia chlamydosporia*
- New Disease Reports**
- 363 M. Kamińska and H. Śliwa  
Mixed infection of dahlia plants in Poland with apple proliferation and aster yellows phytoplasmas
- 363 M. Kamińska and H. Śliwa  
First report of 'Candidatus Phytoplasma mali' in oriental lilies and its association with leaf scorch in Poland
- 364 Z. H. Wang, Q. B. Chen, A. Q. Ye and H. Zhang  
First report of a phytoplasma associated with Praxelis witches' broom in China
- 364 Z. H. Wang, Q. B. Chen, L. F. Yang, H. C. Li and C. J. Bai  
Occurrence of a 16SrII group phytoplasma associated with crotalaria witches' broom in Hainan, China
- 365 R. G. Mafía, R. W. Barreto, C. A. Vanetti, J. Hodgetts, M. Dickinson and A. C. Alfenas  
A phytoplasma associated with witches' broom disease of *Tabebuia pentaphylla* in Brazil
- 365 X. Deng, J. Chen, Z. Shan, G. Zhou, H. Li and F. L. Civerolo  
Identification of 'Candidatus Liberibacter asiaticus' from foshou (*Citrus medica*) in China
- 366 K. Albudaib, Y. Arocha, M. Wilson and P. Jones  
First report of a 16SrI, 'Candidatus Phytoplasma asteris' group phytoplasma associated with a date palm disease in Saudi Arabia
- 366 R. T. Martinez, M. Narvaez, S. Fabre, N. Harrison, C. Oropeza, M. Dollet and E. Hichez  
Coconut lethal yellowing on the southern coast of the Dominican Republic is associated with a new 16SrIV group phytoplasma
- 367 I. Schwarczinger, L. Vajna and S. Süle  
First report of bacterial leaf and flower spot of *Zinnia elegans* caused by *Xanthomonas campestris* pv. *zinniae* in Hungary
- 367 M. M. López, A. Palacio-Bielsa, R. González-Abolafio, R. Santiago, C. I. Salcedo and R. Penyalver  
Tumorigenic *Agrobacterium rhizogenes* (biovar 2) isolated from grapevine in Spain
- 368 J. F. Webber, N. M. Parkinson, J. Rose, H. Stanford, R. T. A. Cook and J. G. Elphinstone  
Isolation and identification of *Pseudomonas syringae* pv. *aesculi* causing bleeding canker of horse chestnut in the UK
- 368 S. Loreti, M. Fiori, D. De Simone, G. Falchi, A. Gallelli, A. Schiaffino and S. Ena  
Bacterial wilt, caused by *Ralstonia solanacearum*, on tomato in Italy
- 369 S. Guba Roy and C. X. Hong  
The first finding of pythium root rot and leaf blight of elephant foot yam (*Amorphophallus paeonifolius*) in India
- 369 J. J. Jiménez, J. E. Sánchez, M. A. Romero, L. Belbahri, A. Trapero, F. Lefort and M. E. Sánchez  
Pathogenicity of *Pythium spiculum* and *P. sterilum* on feeder roots of *Quercus rotundifolia*
- 370 K. Cerny, B. Gregorova, V. Strnadova, V. Holub, M. Tomsouky and M. Cervenka  
*Phytophthora alni* causing decline of black and grey alders in the Czech Republic
- 370 J.-Z. Zhang, J. Li and T. Xu  
First report of *Phytophthora nicotianae* causing blight of *Dendrobium candidum* in Zhejiang province, China
- 371 J. H. Cunningham, R. Aldaoud, M. I. Ob, W. S. Washington and G. Irvine  
First record of *Plasmopara obducens* (downy mildew) on impatiens in Australia
- 371 Y. J. Choi and H. D. Shin  
First record of downy mildew caused by *Pseudoperonospora cubensis* on bottle gourd in Korea
- 372 A. J. Palmateer, P. F. Harmon and T. S. Schubert  
Downy mildew of coleus (*Solenostemon scutellarioides*) caused by *Peronospora* sp. in Florida
- 372 D. R. Humphreys-Jones, A. V. Barnes and C. R. Lane  
First report of the downy mildew *Peronospora lamii* on *Salvia officinalis* and *Rosmarinus officinalis* in the UK
- 373 L. Yolageldi, B. Sin and E. Onogur  
First report of *Oidium neolycopersici* on tomatoes in Turkey



## Contents continued from inside back cover

- 373 D. D. Rosa, C. T. Ohto, M. A. Basseto,  
N. L. de Souza and E. L. Furtado  
Brazil, a new location for powdery mildew on  
parsley and fenchel plants
- 374 B. Henricot and R. T. A. Cook  
New report of a powdery mildew on *Wisteria*  
in the UK
- 374 K. H. Kim, S. K. Lee and H. D. Shin  
First report of powdery mildew caused by  
*Erysiphe lonicerae* var. *lonicerae* on *Lonicera*  
*sempervirens* in Korea
- 375 E. M. Inokuti, D. J. Soares and R. W. Barreto  
Discovery of *Erysiphe platani* anamorph on  
*Platanus* × *hispanica* from Brazil
- 375 C. Liang, G. Z. Lu and H. D. Shin  
First report of powdery mildew of *Platanus*  
*orientalis* caused by *Erysiphe platani* in China
- 376 Z. Li, X. Wang and D. L. Wang  
First report of rust disease caused by *Puccinia*  
*elymi* on *Leymus chinensis* in China
- 376 H. B. Gjørnum, Y. Gauslaa and V. Talgø  
*Gymnosporangium sabiniae* found in Norway
- 377 H. Jabnoun-Khiaredine, M. Daami-Remadi,  
F. Ayed and M. El Mahjoub  
First report of verticillium wilt of artichoke caused  
by *Verticillium dahliae* in Tunisia
- 377 Y.-Z. Ren, H. Tan, Z.-J. Li, J. Du, H. Li  
First report of lavender wilt caused by *Fusarium*  
*solani* in China
- 378 C. Eken, İ. Hasenekoğlu, İ. Çoruh, E. Demirer  
and E. Demirci  
First report of *Fusarium dimerum* on *Solanum*  
*tuberosum* in Turkey
- 378 A. Bustan, S. Cohen, O. Erlich and L. Tsrur  
(Lahkim)  
Association of *Cladosporium* species and  
*Alternaria alternata* and serious post-harvest  
early calyx decay (PHECD) in truss tomatoes  
in Israel
- 379 A. Perelló, M. Moreno and M. Sisterna  
*Alternaria infectoria* species-group associated with  
black point of wheat in Argentina
- 379 G. T. Tziros, A. L. Lagopodi and  
K. Tzavella-Klonari  
*Alternaria alternata* fruit rot of pomegranate  
(*Punica granatum*) in Greece
- 380 L. Zheng, J. Huang and T. Hsiang  
First report of leaf blight of garlic (*Allium*  
*sativum*) caused by *Stemphylium solani* in China
- 380 J. L. Bezerra, E. D. M. N. Luz, K. P. Gramacho,  
V. R. De Figueirêdo and K. M. T. Bezerra  
Occurrence of *Grovesinia pyramidalis* on soursop  
and avocado in Brazil
- 381 M. Mbenoun, E. H. Momo Zeutsa, G. Samuels,  
F. Nsouga Amougou and S. Nyasse  
Dieback due to *Lasiodiplodia theobromae*, a new  
constraint to cocoa production in Cameroon
- 381 S. Radisek, J. Jakse, B. Javornik and J. de Gruyter  
First report of *Phoma exigua* as a pathogen of hop  
in Slovenia
- 382 M. Avilés, S. Castillo, J. Bascon,  
T. Zea-Bonilla, P. M. Martín-Sánchez and  
R. M. Pérez-Jiménez  
First report of *Macrophomina phaseolina*  
causing crown and root rot of strawberry  
in Spain
- 382 P. Alvarez-Loayza, J. F. White Jr., M. Bergen and  
C. Cadenas  
*Diplodia mutila* causing seedling mortality of the  
palm *Iriartea deltoidea*
- 383 S. H. Lee, K. H. Kim and H. D. Shin  
First report of *Septoria pachyspora* causing leaf  
blotch of *Zanthoxylum schinifolium*
- 383 D. N. Aghayeva and T. C. Harrington  
First report of *Cryphonectria parasitica* on  
chestnut (*Castanea sativa*) in Azerbaijan
- 384 A. Vitale and G. Polizzi  
First record of leaf spots and stem lesions on  
*Pistacia lentiscus* caused by *Cylindrocladium*  
*pauciramosum* and *C. scoparium* in Italy
- 384 M. A. Aghajani, A. Alizadeh and H. Rahimian  
First report of brown patch on bristle basket  
grass in Iran
- 385 B. Tóth, M. Csösz, D. Kopahnke and J. Varga  
First report on *Pyrenophora teres* causing lesions  
of wheat leaves in Hungary
- 385 O. P. Verma, R. B. L. Gupta and A. Shivpuri  
A new host for *Pithomyces chartarum*,  
the cause of a leaf spot disease on  
*Withania somnifera*
- 386 A. Aroca, J. Luque and R. Raposo  
First report of *Phaeoacremonium viticola* affecting  
grapevines in Spain
- 386 S. Yakoubi, C. Desbiez, H. Fakhfakh,  
C. Wipf-Scheibel, M. Marrakchi and  
H. Lecoq  
First report of Melon necrotic spot virus on melon  
in Tunisia
- 387 Y. Arocha, N. Vigheri, B. Nkoy-Florent,  
K. Bakwanamaha, B. Bolomphety,  
M. Kasongo, P. Betts, W. A. Monger,  
V. Harju, R. A. Mumford and P. Jones  
First report of the identification of Moroccan  
watermelon mosaic virus in papaya in Democratic  
Republic of Congo
- 387 W. A. Monger, R. A. Mumford, E. Antonio  
García and E. Boa  
Occurrence of Tomato mosaic Havana virus  
in Nicaragua
- 388 D. Massé, P. Lefewre, H. Delatte, A. L. Abdoul  
Karime, B. Hostachy, B. Reynaud and  
J. M. Lett  
Tomato chlorosis virus: first report in Mayotte  
Island

## Contents continued from overleaf

- 388 S. Boukhris Bouhachem, N. Khamassy, L. Glais, C. Kerlan  
Occurrence in Tunisia of potato tuber necrotic ringspot disease (PTNRD) caused by variant PVY<sup>NTN</sup> of *Potato virus Y*
- 389 M. Bousalem and S. Loubet  
Molecular evidence for a new potyvirus species in yam (*Dioscorea* spp.) on the island of Guadeloupe
- 389 B. Wang, M. Li, J. Zhang, C. Han, D. Li and J. Yu  
First report of *Beet soil-borne virus* on sugar beet in China
- 390 H. Y. Xiang, Q. X. Shang, C. G. Han, D. W. Li and J. L. Yu  
First identification of *Beet western yellows virus* on sugarbeet and lettuce in China
- 390 H. Y. Xiang, Q. X. Shang, C. G. Han, D. W. Li and J. L. Yu  
First report on the occurrence of *Cucurbit aphid-borne yellows virus* on nine cucurbitaceous species in China
- 391 K. Kitamura, T. Ogawa, P. Sharma and M. Ikegami  
First report of *Honeysuckle yellow vein mosaic virus* on tomato affected by yellow dwarf disease in Japan
- 391 T. Ogawa, P. Sharma and M. Ikegami  
First report of a strain of *Tobacco leaf curl Japan virus* associated with a satellite DNA in honeysuckle in Japan
- 392 G. Parrella, A. De Stradis and C. Vovlas  
First report of *Olive latent virus 2* in wild castor bean (*Ricinus communis*) in Italy
- 392 H. M. Sipahioglu, M. Usta and M. Ocak  
Occurrence of *Cherry green ring mottle virus* in Turkey
- 393 M. Viršček Marn, I. Mavrič Pleško and J. Zindović  
Discovery and characterization of *Plum pox virus* isolates in Montenegro
- 393 T. Rana, V. Chandel, V. Hallan and A. A. Zaidi  
*Cydonia oblonga* as reservoir of *Apple chlorotic leaf spot virus* in India
- 394 M. T. Marino, E. Ragozzino, B. E. L. Lockhart, R. Miglino and D. Alioto  
First report of *Canna yellow mottle virus* (CaYMV) in Italy and in the Netherlands
- 394 N. Yadav and J. A. Khan  
Identification of a potyvirus associated with mosaic disease of *Narcissus* sp. in India
- 395 N. Mehle, M. Tušek Žnidarič, T. Tornos and M. Ravnikar  
First report of *Broad bean wilt virus 1* in Slovenia
- 395 X. S. Li, Y. Y. Cao, T. Zhou, Y. Q. Cheng, H. F. Li and Z. F. Fan  
*Orychophragmus violaceus*, a new host of *Potato virus X*, reported from China
- 396 I. Ruiz, A. Castaño, M. Borja and C. Hernández  
*Pelargonium chlorotic ring pattern virus*: first report in Spain
- 396 S. Majumder, M. Arya, R. P. Pant and V. K. Baranwal  
*Shallot virus X* in Indian shallot, a new virus report for India
- 397 R. Rasoulpour and K. Izadpanah  
First report of *Eggplant mottled crinkle virus* in geranium in Iran
- 397 R. Y. Xiong, Z. B. Cheng, J. X. Wu, Y. J. Zhou, T. Zhou and X. P. Zhou  
First report of an outbreak of *Rice stripe virus* on wheat in China
- 398 G. C. Hall, A. P. Graham and M. E. Roye  
Tobacco leaf curl Cuba virus infects the weed *Malachra alceifolia* in Jamaica
- 398 D. H. Nakano, D. M. F. Sansini, J. E. Buriolla, N. T. V. Junqueira, E. W. Kitajima and J. A. M. Rezende  
*Psiguria triphylla*: a new natural host of *Papaya ringspot virus* – type W in Brazil
- 399 J. Th. J. Verhoeven, C. C. C. Jansen and J. W. Roenhorst  
First report of pospiviroids infecting ornamentals in the Netherlands: *Citrus exocortis viroid* in *Verbena* sp., *Potato spindle tuber viroid* in *Brugmansia suaveolens* and *Solanum jasminoides*, and *Tomato apical stunt viroid* in *Cestrum* sp.
- 399 J. Th. J. Verhoeven, C. C. C. Jansen and J. W. Roenhorst  
*Streptosolen jamesonii* 'Yellow', a new host plant of *Potato spindle tuber viroid*
- 400 S. Liu, S. Li, J. Zhu, B. Xiang and L. Cao  
First report of *Hop latent viroid* (HLVd) in China
- 400 T. James, V. Mulholland, C. Jeffries and J. Chard  
First report of *Tomato chlorotic dwarf viroid* infecting commercial petunia stocks in the United Kingdom

REVIEW

**Auxin dynamics: the dazzling complexity of a small molecule's message**

C. Delker · A. Raschke · M. Quint 929

ORIGINAL ARTICLES

**Redirection of the phenylpropanoid pathway to feruloyl malate in *Arabidopsis* mutants deficient for cinnamoyl-CoA reductase 1**

M. Mir Derikvand · J.B. Sierra · K. Ruel · B. Pollet · C.-T. Do · J. Thévenin · D. Ruffard · L. Jouanin · C. Lapierre 943

**Expression of rice heat stress transcription factor OsHsfA2e enhances tolerance to environmental stresses in transgenic *Arabidopsis***

N. Yokotani · T. Ichikawa · Y. Kondou · M. Matsui · H. Hirochika · M. Iwabuchi · K. Oda 957

**Insights into the chemical composition of *Equisetum hyemale* by high resolution Raman imaging**

N. Gierlinger · L. Sapei · O. Paris 969

**Novel rice *OsSIPK* is a multiple stress responsive MAPK family member showing rhythmic expression at mRNA level**

M.-O. Lee · K. Cho · S.-H. Kim · S.-H. Jeong · J.-A. Kim · Y.-H. Jung · J. Shim · J. Shibato · R. Rakwal · S. Tamogami · A. Kubo · G.K. Agrawal · N.-S. Jwa 981

**The Rac1 inhibitor, NSC23766, depolarizes adhesive secretion, endomembrane cycling, and tip growth in the fucoid alga, *Silvetia compressa***

W.E. Hable · S. Reddy · L. Julien 991

**Heterologous overexpression of the birch *FRUITFULL*-like MADS-box gene *BpMADS4* prevents normal senescence and winter dormancy in *Populus tremula* L.**

H. Hoenicka · O. Nowitzki · D. Hanelt · M. Fladung 1001

**Unlocking variability: inherent variation and developmental traits of garlic plants originated from sexual reproduction**

E. Shemesh · O. Scholten · H.D. Rabinowitch · R. Kamcnetzky 1013

**Expression analyses of three members of the *AtPHO1* family reveal differential interactions between signaling pathways involved in phosphate deficiency and the responses to auxin, cytokinin, and abscisic acid**

C. Ribot · Y. Wang · Y. Poirier 1025

**A tip-high, Ca<sup>2+</sup>-interdependent, reactive oxygen species gradient is associated with polarized growth in *Fucus serratus* zygotes**

S.M.B. Coelho · C. Brownlee · J.H.F. Bothwell 1037

**Heterologous expression of IAPI, a seed protein from bean modified by indole-3-acetic acid, in *Arabidopsis thaliana* and *Medicago truncatula***

A. Walz · C. Seidel · G. Rusak · S. Park · J.D. Cohen · J. Ludwig-Müller 1047

**Carbohydrate mobilization and gene regulatory profile in the pseudobulb of *Oncidium* orchid during the flowering process**

C.-Y. Wang · C.-Y. Chiou · H.-L. Wang · R. Krishnamurthy · S. Venkatagiri · J. Tan · K.-W. Yeh 1063

**Subcellular concentrations of sugar alcohols and sugars in relation to phloem translocation in *Plantago major*, *Plantago maritima*, *Prunus persica*, and *Apium graveolens***

J. Nadwodnik · G. Lohaus 1079

**Multiple interactions between cryptochrome and phototropin blue-light signalling pathways in *Arabidopsis thaliana***

B. Kang · N. Grancher · V. Koyffimann · D. Lardemer · S. Burney · M. Ahmad 1091

**Electron tomographic characterization of a vacuolar reticulum and of six vesicle types that occupy different cytoplasmic domains in the apex of tip-growing *Chara* rhizoids**

C. Limbach · L.A. Staehelin · A. Sievers · M. Braun 1101

**The hormonal regulation of de-etiolation**

G.M. Symons · J.J. Smith · T. Nomura · N.W. Davies · T. Yokota · J.B. Reid 1115

**Enhanced expression of phospholipase C 1 (*ZmPLC1*) improves drought tolerance in transgenic maize**

C.-R. Wang · A.-F. Yang · G.-D. Yue · Q. Gao · H.-Y. Yin · J.-R. Zhang 1127

**Identification of an *OsPR10a* promoter region responsive to salicylic acid**

S.-H. Hwang · I.A. Lee · S.W. Yie · D.-J. Hwang 1141

**The chloroplast outer membrane protein CHUP1 interacts with actin and profilin**

S. Schmidt von Braun · E. Schleiff 1151

**Methyl jasmonate-elicited herbivore resistance: does MeJA function as a signal without being hydrolyzed to JA?**

J. Wu · L. Wang · I.T. Baldwin 1161

RAPID COMMUNICATIONS

**Molecular characterization of a pepper C2 domain-containing SRC2 protein implicated in resistance against host and non-host pathogens and abiotic stresses**

Y.-C. Kim · S.-Y. Kim · D. Choi · C.-M. Ryu · J.M. Park 1169

**Incorporation and translocation of 2-deoxy-2-[<sup>18</sup>F]fluoro-D-glucose in *Sorghum bicolor* (L.) Moench monitored using a planar positron imaging system**

E. Hattori · H. Uchida · N. Harada · M. Ohta · H. Tsukada · Y. Hara · T. Suzuki 1181

Further articles can be found at [www.springerlink.com](http://www.springerlink.com)

Indexed in *Current Contents/Life Sciences*; *PubMed*; *Chemical Abstracts Service*; *Science Citation Index*; *Aquatic Sciences & Fisheries Abstracts* Included in *SpringerLink Alert*

Instructions for Authors for *Planta* are available at [www.springer.com/00425](http://www.springer.com/00425).

Cover picture: *Oncidium globuliferum* Kunth. (Orchidaceae), Ecuador (Province Napo), Amazonian Montane Rain Forest, 850 m a.s.l. Photo 1991. © Professor Andreas Sievers, Institut für Molekulare Physiologie und Biotechnologie der Pflanzen (IMBIO), Rheinische Friedrich-Wilhelm-Universität Bonn.



Abril 2008

## LA REVISTA PROFESIONAL DE SANIDAD VEGETAL

**Dirección Editorial:** Gonzalo Iranzo Pous

**Directora:** Lola Ortega Colomar

**Redactor Jefe:** Joan Benlloch Alcañiz

**Secretaria de Redacción:** Eva Sampedro Soría

**Consejo de Redacción:** Marjue Arcoy Varela (Madrid), Antonio Beltrán Pérez (Madrid), Juan Antonio Batalla (Valencia), Juan Ignacio Caballero García de Vitorica (Sevilla), Domingo Cadahia Cigolendez (Madrid), Pedro Castañera (Madrid), José Ramón Díaz (Madrid), Miguel Esparza (Pamplona), Alberto García de Lujan y Gil de Bernabé (Jerez), Luis Navarro Lucas (Valencia), Luis de la Puerta (Valencia), Ricardo de Sebastián (Madrid), Juan José Tuset Barrachina (Valencia), José M.ª Vives de Cuadras (Barcelona).

**Departamento de Suscripciones:** Eva Sampedro Soría

**Departamento Editorial:** Amparo Díaz Caballero

**Departamento Financiero:** Arabele Dujar



## PHYTOMA-España

C. San Jacinto, 1 - 3 • 46008 Valencia  
Tel.: +34 96 382 65 11 - Fax: +34 961 362 65 15  
phytoma@phytoma.com  
www.phytoma.com

**Edita:** M. V. Phytoma España, S.L.

**Traductor:** William Vansteenberghe

**Fotomecánica y fotocomposición:** Gráficas Papallona, S.C.V.

**Imprime:** Signo Gráfico (Alborca)

**Depósito legal:** V 1 042-1988

**ISSN:** 1131-8968

PHYTOMA ESPAÑA, incide en el contenido de las ediciones que realiza para verificar y asegurar la exactitud de la información aparecida en sus páginas; no es responsable de la opinión o el juicio de los autores.

# 198 Sumario

4	<b>ACTUALIDAD</b>	24	<b>Producción Integrada en Andalucía: cultivos hortícolas protegidos</b>
	<b>REUNIONES Y CONGRESOS</b>		M. P. Rodríguez-Rodríguez, E. Trujillo Gómez, V. Aparicio Saimeron
	El certamen, con 335 expositores, recibió 170.000 visitantes en esta ocasión	29	<b>Los sistemas de muestreo en horticultura</b>
	La Fira de Sant Josep de Mollerussa cosecha un nuevo éxito		A. Monserrat Delgado
	<b>PHYTOAGENDA</b>	33	<b>Semioquímicos en el manejo de plagas: ¿qué se ha conseguido durante los últimos 20 años y cuál es el futuro?</b>
	<b>OPINIÓN</b>		O. Jones
	El ideal y la realidad	37	<b>20 años de comercialización en España de productos para el Control Biológico</b>
	Leopoldo Arribas		J.M. Lara, E. Vila, C. Fernández
	La araña roja	42	<b>Control biológico de plagas en Almería: Revolución Verde después de dos décadas</b>
	José del Moral de la Vega		J. van der Bom, A. Rueda, S. Torres, J. A. Sánchez, M. Contreras
	<b>CON NOMBRE PROPIO</b>	49	<b>Organismos de control biológico: su actualidad en la horticultura intensiva española y requisitos para su comercialización</b>
	D <sup>a</sup> Juana Labrador Moreno, Presidenta de la Sociedad Española de Agricultura Ecológica (SEAE)		P.P. Peláiz Martínez
	La Sociedad está formada en su mayoría por técnicos, investigadores y docentes	56	<b>La importancia de la Sanidad Vegetal en la agricultura: El control de los insectos vectores de los virus de los cultivos hortícolas</b>
	<b>CUADERNOS PHYTOMA 20 AÑOS DE AGRICULTURA INTEGRADA Y ECOLÓGICA</b>		C. R. Clemente
	<b>HACE 20 AÑOS</b>	60	<b>Aspectos de la agricultura ecológica en España</b>
	Veinte años de control integrado de plagas en España		C. María Tapia
	R. Alcajés		



/ 8 MAYO 2008



# Contents

(Abstracted/Indexed by: Excerpta Medica (EMBASE), Biological Abstracts, Chemical Abstracts, Science Citation Index, Index Medicus, Medline, PubMed, Index Veterinarius.)

## Anatomy

- 
- A proposed transpositional acupoint system in a mouse and rat model  
**C.S. Yin, H.-S. Jeong, H.-J. Park, Y. Baik, M.-H. Yoon, C.-B. Choi and H.G. Koh** 159
- Anatomical and histological aspects of the bovine lingual tonsil  
**G. Cocquyt, P. Simoens, S. Muylle and W. Van den Broeck** 166
- The arterial supply of the eye of the yak (*Bos Grunniens*)  
**B.-P. Shao, Y.-P. Ding, S.-Y. Yu and J.-L. Wang** 174

## Biochemistry

- 
- Myopathy and alterations in serum 3-methylhistidine in dogs with liver disease  
**S. Neumann, H. Welling, T. Bilzer and S. Thuere** 178

## Epidemiology

- 
- Feeding practices and effects of gastrointestinal parasite infections on live weight gain of small ruminants in smallholder mixed farms in Kenya  
**A. Odoi, J.M. Gathuma, C.K. Gachuiru and A. Omoro** 185

## Immunology

- 
- Transient correlation between viremia levels and IL-10 expression in pigs subclinically infected with porcine circovirus type 2 (PCV2)  
**L. Darwich, J. Segalés, A. Resendes, M. Balasch, J. Plana-Durán and E. Mateu** 194
- Influence of 17 $\beta$ -oestradiol, nortestosterone and dexamethasone on the adaptive immune response in veal calves  
**S.W.F. Eisenberg, G. Cacciatore, S. Klarenbeek, A.A. Bergwerff and A.P. Koets** 199

## Molecular Biology

- 
- The cloning and expression of matrix metalloproteinase-2 and tissue inhibitor of matrix metalloproteinase 2 in normal canine lymph nodes and in canine lymphoma  
**R.G. Newman, B.E. Kitchell, M.A. Wallig and B. Paria** 206

## Nutrition

- 
- Fatty acid compositions of mixed ruminal microbes isolated from sheep supplemented with soybean oil  
**O. Kucuk, B.W. Hess and D.C. Rule** 215

## Parasitology

- 
- Gastrointestinal parasite egg excretion in young calves in periurban livestock production in Mali  
**M.N. Wymann, K. Traore, B. Bonfoh, S. Tembely, S. Tembely and J. Zinsstag** 225

*Contents continued on inside back cover*

*Contents continued*

Presence and species identification of the gapeworm <i>Mammomonogamus laryngeus</i> (Railliet, 1899) (Syngamidae: Nematoda) in a semi-wild population of Sumatran orangutan ( <i>Pongo abelii</i> ) in Indonesia <b>I. Foitová, B. Koubková, V. Baruš and W. Nurcahyo</b>	<b>232</b>
Evaluation of IFA, MAT, ELISAs and immunoblotting for the detection of anti- <i>Toxoplasma gondii</i> antibodies in paired serum and aqueous humour samples from experimentally infected pigs <b>J.L. Garcia, S.M. Gennari, I.T. Navarro, R.Z. Machado, S.A. Headley, O. Vidotto, J. da Silva Guimarães Jr., F.M. Bugni and M. Igarashi</b>	<b>237</b>
Prevalence of <i>Linguatula serrata</i> nymphs in one-humped camel ( <i>Camelus dromedarius</i> ) in Najaf-Abad, Iran <b>A. Shakerian, S.S. Shekarforoush and H. Ghafari Rad</b>	<b>243</b>
Seroprevalence of hypodermosis in cattle in some provinces of Turkey <b>S. Simsek, A.E. Utuk, E. Koroglu and N. Dumanli</b>	<b>246</b>
Serological evidence of <i>Neospora caninum</i> infection in mithun ( <i>Bos frontalis</i> ) from India <b>S. Rajkhowa, C. Rajkhowa, P.R. Dutta, P. Michui and R. Das</b>	<b>250</b>
Prevalence of <i>Neospora caninum</i> antibodies in cattle from Santarém, Pará, Brazil <b>A.H.H. Minervino, A.M.A. Ragozo, R.M. Monteiro, E.L. Ortolani and S.M. Gennari</b>	<b>254</b>
<b>Pathology</b>	
<hr/>	
Studies on the evolution, pathology, and immunity of commercial fattening rabbits affected with epizootic outbreaks of diarrhoeas in Mexico: A case report <b>R. Rodríguez-De Lara, C. Cedillo-Peláez, F. Constantino-Casas, M. Fallas-López, M.A. Cobos-Peralta, C. Gutiérrez-Olivera, M. Juárez-Acevedo and L.A. Miranda-Romero</b>	<b>257</b>
Histopathological and immunohistochemical investigations of the hepatic compartment associated with parasitism and serum biochemical changes in canine visceral leishmaniasis <b>R.C. Giunchetti, W. Mayrink, C.M. Carneiro, R. Corrêa-Oliveira, O.A. Martins-Filho, M.J. Marques, W.L. Tafuri and A.B. Reis</b>	<b>269</b>
Systemic fatal type II coronavirus infection in a dog: Pathological findings and immunohistochemistry <b>V. Zappulli, D. Caliari, L. Cavicchioli, A. Tinelli and M. Castagnaro</b>	<b>278</b>
<b>Pharmacology</b>	
<hr/>	
Determination of minimum alveolar concentration of sevoflurane in juvenile swine <b>A.J. Moeser, A.T. Bliklager and C. Swanson</b>	<b>283</b>
<b>Physiology</b>	
<hr/>	
Twin-pregnancy increases susceptibility of ewes to hypoglycaemic stress and pregnancy toxæmia <b>C. Schlumbohm and J. Harmeyer</b>	<b>286</b>
Hounsfield Unit dynamics of adipose tissue and non-adipose soft tissues in growing pigs <b>F.J. McEvoy, M.T. Madsen, A.B. Strathe and E. Svalastoga</b>	<b>300</b>
<b>Surgery</b>	
<hr/>	
Evaluation of equine cecal motility by auscultation, ultrasonography and electrointestinalography after jejunocostomy <b>N. Sasaki, A. Murata, I. Lee and H. Yamada</b>	<b>305</b>
<b>Virology</b>	
<hr/>	
Sequence comparison of pigeon circoviruses <b>D. Todd, E. Fringuelli, A.N.J. Scott, B.J. Borghmans, J.P. Duchatel, H.L. Shivaprasad, S.R. Raidal, J.X. Abadie, M.P. Franciosi and J.A. Smyth</b>	<b>311</b>

# Contents

(Abstracted/Indexed by: Excerpta Medica (EMBASE), Biological Abstracts, Chemical Abstracts, Science Citation Index, Index Medicus, Medline, PubMed, Index Veterinarius.)

## Anatomy

- The electrophysiological bulbocavernosus reflex test in female dogs: Its technique and applicability  
**E. Turan, C. Unsal and I.G. Yildirim** 321
- Acid phosphatase and cathepsin D are active expressed enzymes in the placenta of the cat  
**C.K. Minazaki, S. Gagioti, D. Zago, W. Terra, V.C. Araujo, R.A. Oliveira and E. Bevilacqua** 326

## Bacteriology

- Assessment of the IgG index in dogs by indirect immunoenzymatic assays as diagnostic tool for inflammatory diseases of central nervous system  
**M. Mejías, M.C. Molina and A. Ferreira** 335

## Biochemistry

- Advanced glycation end products and sorbitol in blood from differently compensated diabetic dogs  
**S. Comazzi, W. Bertazzolo, U. Bonfanti, V. Spagnolo and P. Sartorelli** 341
- Measurement of equine myeloperoxidase (MPO) activity in synovial fluid by a modified MPO assay and evaluation of joint diseases – An initial case study  
**S. Fietz, A. Bondzio, A. Moschos, B. Hertsch and R. Einspanier** 347
- Comparison of measurements of canine plasma glucose, creatinine, urea, total proteins, alanine aminotransferase, and alkaline phosphatase obtained with the APOLOWAKO and Vitros 250 analyzers  
**A. Geffré, J.P. Braun, C. Germain, F. Palanché, R. Kueper and C. Trumel** 354

## Endocrinology

- Serum cortisol and progesterin concentrations in pregnant and non-pregnant Asian elephants (*Elephas maximus*)  
**C.A. Oliveira, E.C.G. Felipe and M.O.M. Chelini** 361
- Calcium-stimulation test for the assessment of  $\beta$ -cell function in cats  
**L.I. Slingerland, A. Rijnberk and H.S. Kooistra** 364

## Immunology

- Isolation and immunological detection of *Mycoplasma ovipneumoniae* in sheep with atypical pneumonia, and lack of a role for *Mycoplasma arginini*  
**Y.-C. Lin, R.J. Miles, R.A.J. Nicholas, D.P. Kelly and A.P. Wood** 367

## Molecular Biology

- Avian influenza virus infection induces differential expression of genes in chicken kidney  
**W. Zhang, H. Li, G. Cheng, S. Hu, Z. Li and D. Bi** 374
- Evidence of *Anaplasma* infections in European roe deer (*Capreolus capreolus*) from southern Spain  
**J. de la Fuente, F. Ruiz-Fons, V. Naranjo, A. Torina, O. Rodríguez and C. Gortázar** 382

Contents continued on inside back cover

Contents continued

**Nutrition**

Fumaric and sorbic acid as additives in broiler feed <b>V. Pirgozliev, T.C. Murphy, B. Owens, J. George and M.E.E. McCann</b>	<b>387</b>
Atlantic salmon ( <i>Salmo salar</i> L.) parr fed genetically modified soybeans and maize: Histological, digestive, metabolic, and immunological investigations <b>A.M. Bakke-McKellep, M. Sanden, A. Danieli, R. Acierno, G.-I. Hemre, M. Maffia and Å. Krogdahl</b>	<b>395</b>
Effects of high dietary vitamin A supplementation on tibial dyschondroplasia, skin pigmentation and growth performance in avian broilers <b>J. Li, D. Bi, S. Pan, Y. Zhang and D. Zhou</b>	<b>409</b>

**Parasitology**

<i>Giardia</i> and <i>Cryptosporidium</i> in canine faecal samples contaminating an urban area <b>L. Rinaldi, M.P. Maurelli, V. Musella, V. Veneziano, S. Carbone, A. Di Sarno, M. Paone and G. Cringoli</b>	<b>413</b>
Prevalence of canine giardiasis in South Korea <b>J. Liu, S.E. Lee and K.H. Song</b>	<b>416</b>

**Pathology**

Insulin-like growth factor I in sera, ovarian follicles and follicular fluid of cows with spontaneous or induced cystic ovarian disease <b>H.H. Ortega, M.M. Palomar, J.C. Acosta, N.R. Salvetti, B.E. Dallard, J.A. Lorente, C.G. Barbeito and E.J. Gimeno</b>	<b>419</b>
Are complex carcinoma of the feline mammary gland and other invasive mammary carcinoma identical tumours? Comparison of clinicopathologic features, DNA ploidy and follow up <b>F. Seixas, C. Palmeira, M.A. Pires and C. Lopes</b>	<b>428</b>
Reduced PKC $\zeta$ expression in pulmonary arterioles of broiler chickens is associated with early feed restriction <b>J.-q. Pan, X. Tan, J.-c. Li, W.-d. Sun, G.-q. Huang and X.-I. Wang</b>	<b>434</b>
Nucleomorphometric analysis of feline basal cell carcinomas <b>R. Simeonov and G. Simeonova</b>	<b>440</b>

**Pharmacology**

<i>In vitro</i> effects of bethanechol on smooth muscle preparations from abomasal fundus, corpus, and antrum of dairy cows <b>M. Buehler, A. Steiner, M. Meylan, C.J. Portier and M. Mevissen</b>	<b>444</b>
Pharmacokinetics of diclofenac and its interaction with enrofloxacin in sheep <b>A. Rahal, A. Kumar, A.H. Ahmad and J.K. Malik</b>	<b>452</b>
Morphine reduces spinal c-fos expression dose-dependently during experimental laparotomy in pigs: A combined pharmacokinetic and surgical study <b>K. Lykkegaard, J. Lykkesfeldt, B. Lauritzen and O. Svendsen</b>	<b>457</b>
The effect of hypertonic saline solution on vasodilatation of the superior sagittal sinus using magnetic resonance imaging in normovolemic dogs <b>K. Suzuki, H. Koie, T. Matsumoto and R. Asano</b>	<b>465</b>
Influence of mycotoxins on spontaneous contraction in myometrial strips of prepubertal lamb <b>A. Giammarino, M. Manera, D. Robbe, M. Perugini, F. Minervini and M. Amorena</b>	<b>471</b>
Pharmacokinetic study of an injectable long-acting parenteral formulation of doxycycline hyclate in calves <b>D. Vargas-Estrada, J. Gracia-Mora and H. Sumano</b>	<b>477</b>
Pharmacokinetic parameters of ceftriaxone after single intravenous and intramuscular administration in camels ( <i>Camelus Dromedarius</i> ) <b>A. Goudah</b>	<b>483</b>

Contents continued on inside back page



*Contents continued*

**Species**

---

Effect of storage on microcytosis observed in dogs with portosystemic vascular anomalies <b>M. Goodfellow, K. Papasouliotis, S. Cue, E. Crawford and E. Hall</b>	<b>490</b>
---	------------

**Virology**

---

Expression of feline angiotensin converting enzyme 2 and its interaction with SARS-CoV S1 protein <b>H. Guo, A. Guo, C. Wang, B. Yan, H. Lu and H. Chen</b>	<b>494</b>
Genetic characterization of porcine circovirus type 2 in Republic of Korea <b>K.-S. Choi and J.-S. Chae</b>	<b>497</b>
Impact of porcine group A rotavirus co-infection on porcine epidemic diarrhea virus pathogenicity in piglets <b>K. Jung, B.-K. Kang, C.-S. Lee and D.-S. Song</b>	<b>502</b>
Identification of bovine viral diarrhea virus type 1 in yaks ( <i>Bos poephagus grunniens</i> ) in the Himalayan region <b>N. Mishra, S. Vilcek, K. Rajukumar, R. Dubey, A. Tiwari, V. Galav and H.K. Pradhan</b>	<b>507</b>

# Review of Agricultural Economics

Volume 30, Number 1, Spring 2008

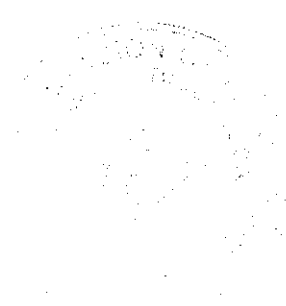
## Table of Contents

1 A Note from the Editors

18 MAYO 2008

### Applied Analyses

- 4 The Effect of Wal-Mart Supercenters on Grocery Prices in New England/*Richard J. Volpe III and Nathalie Lavoie*
- 27 Decoupled Farm Payments and Expectations for Base Updating/*Keith H. Coble, J. Corey Miller, and M. Darren Hudson*
- 43 Are Younger Cohorts Demanding Less Fresh Vegetables?/*Hayden Stewart and Noel Blisard*
- 61 Effects of Regional Trade Agreements on Trade in Agrifood Products: Evidence from Gravity Modeling Using Disaggregated Data/*Sanjath Jayasinghe and Rakhal Sarker*
- 82 Changing the U.S. Sugar Program into a Standard Crop Program: Consequences under the North American Free Trade Agreement and Doha/*David Abler, John C. Beghin, David Blandford, and Amari Elobeid*
- 103 Subsidized Options in a Thin Market: A Case Study of the Dairy Options Pilot Program Introduction/*David Buschena and Kevin McNece*
- 120 Measuring the Costs and Trade Effects of Phytosanitary Protocols: A U.S.–Japanese Apple Example/*Linda Calvin, Barry Krissoff, and William Foster*
- 136 Effects of North American BSE Events on U.S. Cattle Prices/*John M. Marsh, Gary W. Brester, and Vincent H. Smith*
- 151 World Health Organization Dietary Norms: A Quantitative Evaluation of Potential Consumption Impacts in the United States, United Kingdom, and France/*Bhuvan Shankar, C. S. Srinivasan, and Xavier Irz*
- 176 Factors Affecting Sales at Farmers' Markets: An Iowa Study/*Theresa Varner and Daniel Otto*





	From the Editor	3
Research articles	✻ <i>Panagiotis Michopoulos, George Baloutsos &amp; Anastassios Economou</i> Nitrogen cycling in a mature mountainous beech forest	5–17
	✻ <i>Miina Rautiainen, Matti Möttö, Pauline Stenberg &amp; Sanna Ervasti</i> Crown envelope shape measurements and models	19–33
	✻ <i>Julian C. Fox, Huiquan Bi &amp; Peter K. Ades</i> Modelling spatial dependence in an irregular natural forest	35–48
	✻ <i>Aksel Granhus &amp; Dag Fjeld</i> Time consumption of planting after partial harvests	49–61
	✻ <i>Yrjö Nuutinen, Kari Väätäinen, Jaakko Heinonen, Antti Asikainen &amp; Dominik Röser</i> The accuracy of manually recorded time study data for harvester operation shown via simulator screen	63–72
	✻ <i>Emil Cienciala, Erkki Tomppo, Arnor Snorrason, Mark Broadmeadow, Antoine Colin, Karsten Dunger, Zuzana Exnerova, Bruno Lasserre, Hans Petersson, Tibor Priwitzer, Gerardo Sanchez &amp; Göran Ståhl</i> Preparing emission reporting from forests: use of National Forest Inventories in European countries	73–88
	<i>Mikko Havimo, Juha Rikala, Jari Sirviö &amp; Marketta Sipi</i> Distributions of tracheid cross-sectional dimensions in different parts of Norway spruce stems	89–99
	■ <i>Manfred Gronalt &amp; Peter Rauch</i> Vendor managed inventory in wood processing industries – a case study	101–114
Research notes	✻ <i>Adam Boratynski, Katarzyna Marcysiak, Amelia Lewandowska, Anna Jasinska, Grzegorz Iszkulo &amp; Jaroslaw Burczyk</i> Differences in leaf morphology between <i>Quercus petraea</i> and <i>Q. robur</i> adult and young individuals	115–124
	✻ <i>Christian Kiffner, Elisabeth Rößiger, Oliver Trisl, Rainer Schulz &amp; Ferdinand Rühle</i> Probability of recent bark stripping damage by red deer ( <i>Cervus elaphus</i> ) on Norway spruce ( <i>Picea abies</i> ) in a low mountain range in Germany – a preliminary analysis	125–134
Discussion paper	✻ <i>Seppo Rouvinen &amp; Jari Kouki</i> The natural northern European boreal forests: unifying the concepts, terminologies, and their application	135–146
	Reviewers of manuscripts 2007	147–148



## FERIAS

## SUMARIO



Editorial .....	1
Agenda: Ferias, Anuncios .....	2
<b>OPINIÓN</b>	
Agua y agricultura en Monegros .....	3
Después de 50 años, el canal de Caspe sigue esperando para regar ....	4
Ayudas directas a los ganaderos para que puedan continuar .....	6
<b>POLÍTICA AGRARIA</b>	
El campo tiene razon cuando pide soluciones .....	8
El chequeo medico de la PAC, a debate .....	10
<b>CLIMATOLOGÍA ADVERSA</b>	
Panorama incierto: ¿otra campaña agraria en seco? .....	11
<b>SECTORES AGRÍCOLAS</b> .....	12
<b>INFORMACIÓN TÉCNICA</b>	
"Informaciones Técnicas": Una Publicación Técnica para el Sector Agrario Aragonés .....	20
<b>SECTORES GANADEROS</b> .....	22
<b>ENTREVISTA</b> .....	28
<b>JÓVENES</b> Promesas de futuro .....	30
<b>MUJER</b> Programación actividades del area de la mujer .....	30
<b>LEGISLACIÓN</b>	
Cotización en el nuevo sistema de Seguridad Social Agraria .....	32
<b>RELACIONES LABORALES</b>	
Plan especial para la contratación de rumanos y bulgaros en la provincia de Zaragoza .....	33
<b>NOTICIAS</b> .....	34
<b>SERVICIOS Y SEGUROS</b> .....	36

<b>III Feria Nature</b> 27 de abril Zaidín (Huesca)	<b>XX Expoforga</b> del 30 de mayo al 1 de junio Puente la Reina (Huesca)
<b>VIII Valga</b> del 1 al 4 de mayo Épila (Zaragoza)	<b>XIX Feria de Sant Medardo</b> 31 de mayo y 1 de junio Benabarre (Huesca)
<b>Feria de mayo</b> del 2 al 4 de mayo Valderrobres (Teruel)	<b>III Feria de la Pasta Alimenticia y el Dulce</b> 31 de mayo y 1 de junio Daroca (Zaragoza)
<b>Biocultura</b> del 8 al 11 de mayo Barcelona Feria alternativa del consumo responsable (www.biocultura.org)	<b>VII Estepárea</b> 31 de mayo y 1 de junio Sariñena (Huesca)
<b>VII Feria de Almodévar</b> del 9 al 11 de mayo Almodévar (Huesca)	<b>IV Feria Agroganadera y comercial</b> 31 de mayo y 1 de junio Torralba de los Sisonos (Teruel)
<b>Salón de Autonomía, Dependencia y Discapacidad</b> del 16 al 18 de mayo Zaragoza	<b>X Feria Agrícola, Ganadera y Artesana</b> 7 y 8 de junio Castellote (Teruel)
<b>V Feria comarcal Campo de Belchite</b> 17 y 18 de mayo Lécera (Zaragoza)	<b>IX Feria de la Cereza de Bolea</b> 15 de junio Bolea (Huesca)
<b>XI Feria comercial de Cantavieja</b> 25 de mayo Cantavieja (Teruel)	<b>III MU' - Feria de la Ternera de Binéfar</b> del 21 al 23 de junio Binéfar (Huesca)

**COAG ha renovado el acuerdo con Mitsubishi, hasta el 31 de diciembre de 2008. Los afiliados de UAGA tendrán descuentos entre el 8 y el 12% en los modelos: Colt, Grandis, Montero, Outlander y L200.**

## ANUNCIOS

- Vendo finca rústica** con 5 Ha. de cereal de regadío, 2 Ha. de cereal de secano, 7 Ha. de almendro en secano y 35 Ha. de pinar. Masía vieja de 200 m<sup>2</sup>, paridera de ovejas de 600 m<sup>2</sup> y almacén de 600 m<sup>2</sup>. La finca tiene balsa de agua para el ganado, línea de luz y agua de boca cerca. Término municipal de Valderrobres (Teruel), lindando con el río Matarraña. Teléfono: 978 890 508 / 659 873 942
- Vendo sembradora** de precisión Rimasa, 2,5 metros de ancho, con bota. En buen estado. Teléfono: 976 165 239 (dejar mensaje)
- Vendo 500 ovejas** rasa aragonesa saneada, con derechos y preñadas, en la provincia de Teruel. Teléfono: 620 143 310
- Vendo plameca** podador 2H, seminueva, por cese de actividad. Teléfono: 659 866 001
- Vendo remolque** autocargador, marca Arcusin, modelo E-140. Muy cuidado. Teléfono: 616 80 14 32
- Vendo remolque** autocargador picador de alfalfa, Jusc-fresa AJ-50 Plus. Muy bien cuidado y pocas horas. Teléfono: 616 80 14 32
- Vendo desfondador** de 5 cubas con rulo, y cultivador de tres metros y medio. Teléfono: 675 520 423
- Vendo diverso** material de ganado ovino: tolvas, vallias, comederas, etc. Teléfono: 656 907 134
- Vendo** maiz en grano o en pinocha, secado natural. Teléfono: 976 165 239 (dejar mensaje)
- Vendo:** Caldera de leña L20. Sembradora de patatas automática de pinchos, marca Gil. Dos ruedas de tractor 14-30. Piezas de desagüe de tractor Ebro 6125. Máquina de esquilari Gilvi, manoplas y máquina de afilar. Teléfono: 649 183 735
- Vendo:** cosechadora IASA, 3m. corte, y tractor AVTO, 80 cv., ambos con mil horas. Teléfono: 976 896 199

## tierras de aragón

Número 173 (Marzo-Abril de 2008)

Edita: UAGA

Lúcas Gallego, 72 50009 ZARAGOZA - Telf.: 976 352 950 - Fax 976 352 954  
prensa@uaga-aragon.com

Director: Javier Sánchez Ansó

Coordinación y fotografía: Lola García Ansodi

Consejo de redacción:

José Carlos Monteagudo - Teo Largo

José M.ª Percebal - Carmen Fraj

Angeles Alonso - Carlos Polo

Preimpresión, impresión  
y encuadernación:

Gráficas OLIMAR, S.L.

c/ Carl Benz 27

Tel. 976 736 078

Depósito legal: Z-729-79

*La Unión de Agricultores y Ganaderos de Aragón no comparte necesariamente todas las opiniones que aparecen reflejadas en Tierras de Aragón, por lo que no se hace responsable de ellas.*

## UAGA - OFICINAS

Regional y provincial de Zaragoza - Lucas Gallego, 72 (Ciudad Jardín) - Telf.: 976 352 950

Oficina Servicios Regional y Provincial de Zaragoza - Duquesa Villahermosa, 119, local 5

Provincial de Huesca - Coso Alto, 67 - Telf.: 974 244 056 - HUESCA

Provincial de Teruel - Diputación, 1, 2º - Telf.: 978 730 361 - CALAMOCHA

## COMARCALES

Belchite (Zaragoza) - 18 de julio, 20 - Telf.: 976 830 987

Calatayud (Zaragoza) - Padre Claret, 5 - Telf.: 976 881 781

Caspe (Zaragoza) - Plaza Aragón, 1, 1º - Telf.: 976 632 337

Daroca (Zaragoza) - Plaza de los Taxis

Ejea (Zaragoza) - Paseo del Muro, 32 - Telf.: 976 661 717

Zuera (Zaragoza) - Plaza de España, s/n - Telf.: 976 681 202

Alcolea (Huesca) - Caridad, 7 - Telf.: 609 935 983 (mañanas viernes)

Fraga (Huesca) - Plaza Barrón, 1, 3º B - Telf.: 974 470 058

Puente la Reina (Huesca) - Ctra. Tarragona-San Sebastián, s/n - Telf.: 974 377 033

Alcañiz (Teruel) - Plaza Andorra, 1, 3º B - Telf.: 978 832 767

Teruel - Camino Estación, 13 - Telf.: 978 610 854

Servicio de Asesoría Jurídica en Caspe y Alcañiz: el primer y tercer miércoles de cada mes, previa cita

/ 8 MAYO 2008

TIERRAS DE CASTILLA Y LEÓN



# Agricultura

nº 145 (año 2008)



## MAÍZ 2008

**EDITA:**  
Gestora de Comunicaciones de  
Castilla y León  
Paseo del Arco de Ladrillo, 64  
Edificio 2, Portal 2, 3º derecha  
47008 - Valladolid  
Teléfono: 983 47 72 01  
Fax: 983 47 63 04  
Correo electrónico:  
redaccion@tierras-digital.com

**DIRECTOR:**  
Fernando de Paz Cabello

**REDACCIÓN:**  
Jairo Herrera, Silvia de la Fuente  
Franca Velasco, Alejandro de Vega,  
Victor Manuel Molano  
Guillermo Caramazana de Paz,  
Fernando de Paz Cabello

**PUBLICIDAD, SUSCRIPCIONES y  
ADMINISTRACIÓN:**  
Javier Miranda (Publicidad)  
María del Mar Arranz (Administración)  
Pablo Gómez (Suscripciones)  
Paseo del Arco de Ladrillo, 64  
Edificio 2, Portal 2, 3º derecha  
47008 - Valladolid  
Centralita: 983 47 72 01  
Fax: 983 47 63 04  
Correo electrónico:  
suscripciones@tierras-digital.com  
publicidad@tierras-digital.com

**EDICIÓN:**  
Paulino de Paz Cabello

**FOTOMECAÁNICA e IMPRESIÓN:**  
CELARAYN, SA  
Pol. Indust. de León, P. M83, León

**DEPÓSITO LEGAL:**  
LE-675-1995

**Fotografías:** Archivo Tierras

Esta publicación no se hace responsable del contenido  
de los artículos firmados por cada autor

8) El girasol "disputa" al maíz varios miles de hectáreas en la región  
ante los problemas de riego

16) La siembra del maíz

28) Red de ensayos de nuevas variedades de maíz en Casti-  
lla y León

*La finalidad de la experimentación de variedades en la Red Regional de Ensayos  
es facilitar a los agricultores información del comportamiento de determinadas  
variedades para que puedan elegir la más idónea a sus condiciones de cultivo*

64) Fumonisinias en maíz

66) Sostenibilidad y Progreso

74) Maíz ecológico

*El cultivo ecológico de maíz es una alternativa prometedora que no presenta  
particulares complicaciones prácticas, siendo su principal limitación la reducción  
de rendimiento por la prohibición de cultivar híbridos*

86) Las dosis de N fertilizante que permiten alcanzar el rendimiento  
máximo de grano de maíz con sistemas de riego de media-alta  
eficiencia oscilaron entre 136 y 276 kg N ha<sup>-1</sup>

106) Resultados de la aplicación de la 'Telegestión Integral del Riego'  
en Xinzo de Limia

113) Los precios de la uva subieron hasta un 25% en algunas zonas  
durante la última campaña

122) Interacción de diferentes escardas y fertilizaciones sobre el con-  
trol de la flora arvense y el rendimiento del cereal

130) Agricultura ecológica de secano

*La Agricultura Ecológica, lejos de ser una vuelta atrás o un enfoque nostálgico  
del mundo agrícola, es un enorme campo de investigación para el desarrollo de  
técnicas adecuadas a cada ambiente que aprovechan sus equilibrios naturales*

Tierras

## Editor

Zoltan Fehervari

Managing Editor

Peter Lee

Production Editor

Kirsty Strawbridge

Editorial Assistant

Suado Nur

Production and Design

Lara Crow

Mat McCutcheon

Philip Patenall

Neill Sharp

## Editorial Board

*Trends in Immunology*

Elsevier,

84 Theobald's Road,

London, UK WC1X 8RR

Tel: +44 (0)20 7611 4400

Fax: +44 (0)20 7611 4470

E-mail: immunology@elsevier.com

## Advisory Editorial Board

G. Anderson, *Birmingham, UK*

J.D. Ashwell, *Bethesda, USA*

F.R. Carbone, *Melbourne, Australia*

M.F. Flajnik, *Baltimore, USA*

A. George, *London, UK*

S. Grabbe, *Münster, Germany*

B.A. Imhof, *Geneva, Switzerland*

P.W. Kincade, *Oklahoma City, USA*

M. Kronenberg, *La Jolla, USA*

J.D. Lambris, *Philadelphia, USA*

A. Mantovani, *Milan, Italy*

L.M. Moretta, *Genova, Italy*

G.J.V. Nossal, *Melbourne, Australia*

P.S. Ohashi, *Toronto, Canada*

L.A.J. O'Neill, *Dublin, Ireland*

R.M. Ransohoff, *Cleveland, USA*

P. Ricciardi-Castagnoli, *Milan, Italy*

C. Terhorst, *Boston, USA*

K. Wood, *Oxford, UK*

R.M. Zinkernagel, *Zurich, Switzerland*

## Update

### Research focus

- 51 **Friend or foe: the same fold for attack and defense** Natalya Lukoyanova and Helen R. Saibil

## Opinion

- 54 **Resistance is futile: antineuronal autoimmunity in multiple sclerosis** Ruth Huizinga, Christopher Lington and Sandra Amor
- 61 **Is HIV infection a TNF receptor signalling-driven disease?** Georges Herbein and Kashif Aziz Khan
- 68 **Toward cell-based therapy of type I diabetes** Dieter Kabelitz, Edward K. Geissler, Bernat Soria, Insa S. Schroeder, Fred Fändrich and Lucienne Chatenoud

## Review

- 75 **Clipping, shedding and RIPping keep immunity on cue** Gillian Murphy, Aditya Murthy and Rama Khokha
- 83 **Sweet preferences of MGL: carbohydrate specificity and function** Sandra J. van Vliet, Eirikur Saeland and Yvette van Kooyk
- 91 **The immunoglobulin constant region contributes to affinity and specificity** Marcela Torres and Arturo Casadevall



## Forthcoming articles

### Signaling and gene transcription aberrations dictate the systemic lupus erythematosus T cell phenotype

Jose C. Crispin, Vasileios C. Kyttatis, Yaung-Taung Juang and George Tsokos

### Novel strategies to eliminate persistent viral infections

Marianne M. Martinc and Matthias G. von Herrath

### Of Omenn and mice

Veronica Marrella, Pietro L. Poiani, Cristina Sobacchi, Fabio Grassi and Anna Villa

### HLA G: from biology to clinical benefits

Edgardo Carosella, Philippe Moreau, Joel LeMaout and Nathalie Rouas-Freiss

### Les liaisons dangereuses: immunological synapse formation in animals and plants

Chian Kwon, Ralph Panstruga and Paul Schulze-Lefert

**Cover:** The role of proteinases in tissue remodelling, cell–cell interactions and motility is well established. Recent years have, however, revealed increasingly important roles for the matrix and disintegrin metalloproteinases in proper immune function. On pages 75–82, Gillian Murphy and colleagues describe how immune cells engage a large repertoire of proteinases in the orchestration of activation, migration and effector function of immune responses.

Editor  
Zoltan Fehervari  
Executive Editor  
Peter Lee  
Production Editor  
Kirsty Strawbridge  
Editorial Assistant  
Suado Nur  
Illustrations and Design  
Lara Crow  
Mat McCutcheon  
Philip Patenall  
Neill Sharp

Editorial Enquiries  
*Trends in Immunology*  
Elsevier,  
84 Theobald's Road,  
London, UK WC1X 8RR  
Tel: +44 (0)20 7611 4400  
Fax: +44 (0)20 7611 4470  
E-mail: immunology@elsevier.com

Advisory Editorial Board  
G. Anderson, *Birmingham, UK*  
J.D. Ashwell, *Bethesda, USA*  
F.R. Carbone, *Melbourne, Australia*  
M.F. Flajnik, *Baltimore, USA*  
A. George, *London, UK*  
S. Grabbe, *Münster, Germany*  
B.A. Imhof, *Geneva, Switzerland*  
P.W. Kincade, *Oklahoma City, USA*  
M. Kronenberg, *La Jolla, USA*  
J.D. Lambris, *Philadelphia, USA*  
A. Mantovani, *Milan, Italy*  
L.M. Moretta, *Genova, Italy*  
G.J.V. Nossal, *Melbourne, Australia*  
P.S. Ohashi, *Toronto, Canada*  
L.A.J. O'Neill, *Dublin, Ireland*  
R.M. Ransohoff, *Cleveland, USA*  
P. Ricciardi-Castagnoli, *Milan, Italy*  
C. Terhorst, *Boston, USA*  
K. Wood, *Oxford, UK*  
R.M. Zinkernagel, *Zurich, Switzerland*

## Update

### Research Focus

- 99 **Foxp3<sup>+</sup>CD4<sup>+</sup> T cell-mediated immunosuppression involves extracellular nucleotide catabolism** Margaret S. Bynoe and Christophe Viret

## Opinion

- 103 **Receptor editing and receptor revision in rheumatic autoimmune diseases** Moncef Zouali

## Review

- 110 **How signaling and gene transcription aberrations dictate the systemic lupus erythematosus T cell phenotype** José C. Crispín, Vasileios C. Kyttaris, Yuang-Taung Juang and George C. Tsokos
- 116 **Novel strategies to eliminate persistent viral infections** Marianne M. Martinic and Matthias G. von Herrath
- 125 **HLA-G: from biology to clinical benefits** Edgardo D. Carosella, Philippe Moreau, Joël LeMaout and Nathalie Rouas-Freiss
- 133 **Of Omenn and mice** Veronica Marrella, Pietro Luigi Poliani, Cristina Sobacchi, Fabio Grassi and Anna Villa
- 141 **The convergent roles of tapasin and HLA-DM in antigen presentation** Scheherazade Sadegh-Nasseri, Mingnan Chen, Kedar Narayan and Marlene Bouvier

## Forthcoming articles

### Les liaisons dangereuses: immunological synapse formation in animals and plants

Chian Kwon, Ralph Panstruga, and Paul Schulze-Lefert

### The hygiene hypothesis and psychiatric disorders

Graham Rook and Chris Lowry

### Immunity to self and self-maintenance: a unified theory of brain pathologies

Yaniv Ziv and Michal Schwartz

### PKC- $\theta$ and the 'convergence of signals' determine T cell fate and function

Benjamin Marsland and Manfred Kopf

**Cover:** T cells from patients with the autoimmune disease systemic lupus erythematosus (SLE) exhibit a number of specific defects and alterations in the CD3 chain, signaling and gene expression. On pages 110–115, George Tsokos and colleagues discuss how this 're-wiring' of the SLE T cell response underlies much of the disease pathology and how knowledge of these altered signaling pathways may soon lead to useful diagnostic and therapeutic tools.



/ 8 MAYO 2008

# veterinary parasitology



VOLUME 152, ISSUES 1-2

CONTENTS

25 MARCH 2008

(Abstracted/Indexed in: BIOSIS, Current Contents/Agriculture, Biology & Environmental Sciences, Elsevier BIOBASE, Helminthological Abstracts, Index Catalog of Medical and Veterinary Zoology, Index Veterinarius, MEDLINE®, Protozoological Abstracts, Referativnyi Zhurnal, Veterinary Bulletin. Also covered in the abstract and citation database SCOPUS®. Full text available on Science Direct®.)

## Research articles

- Detection and molecular characterization of *Babesia canis vogeli* from naturally infected dogs and *Rhipicephalus sanguineus* ticks in Tunisia  
Y. M'ghirbi and A. Bouattour ..... 1
- Modest genetic differentiation among North American populations of *Sarcocystis neurona* may reflect expansion in its geographic range  
N. Sundar, I.M. Asmundsson, N.J. Thomas, M.D. Samuel, J.P. Dubey, B.M. Rosenthal ..... 8
- Assessment of primers designed for the subspecies-specific discrimination among *Babesia canis canis*, *Babesia canis vogeli* and *Babesia canis rossi* by PCR assay  
S.C. Duarte, G.F.C. Linhares, T.N. Romanowsky, O.J. da Silveira Neto and L.M.F. Borges ..... 16
- Alterations triggered by steroid gonadal hormones in triglycerides and the cellular immune response of *Calomys callosus* infected with the Y strain of *Trypanosoma cruzi*  
R.D. Fernandes, L.C. Caetano, C.D. dos Santos, A.A.C. Abrahão, A.C.H. Pinto and J.C. Prado Jr. .... 21
- The first report of *Hepatozoon* sp. (Apicomplexa: Hepatozoidae) in neotropical felids from Brazil  
B. Metzger, K. dos Santos Paduan, A.S. Rubini, T.G. de Oliveira, C. Pereira, L.H. O'Dwyer ..... 28
- Occurrence of *Toxoplasma gondii* and *Hammondia hammondi* oocysts in the faeces of cats from Germany and other European countries  
G. Schares, M.G. Vrhovec, N. Pantchev, D.C. Herrmann and F.J. Conraths ..... 34
- Prevalence and risk factors for *Cryptosporidium* spp. infection in young calves  
E. Brook, C.A. Hart, N. French and R. Christley ..... 46
- Effect of *Cryptosporidium parvum* infection on the absorptive capacity and paracellular permeability of the small intestine in neonatal calves  
P. Klein, T. Kleinová, Z. Volek and J. Šimůnek ..... 53
- Plasma insulin concentrations in hypoglycaemic dogs with *Babesia canis rossi* infection  
P. Rees and J.P. Schoeman ..... 60
- Outbreak of microsporidiosis caused by *Enterocytozoon bieneusi* in falcons  
M.G. Müller, J. Kinne, R.K. Schuster and J. Walochnik ..... 67
- Neospora caninum* infection in Greek dairy cattle herds detected by two antibody assays in individual milk samples  
S. Sotiraki, C. Brozos, F. Samartzi, G. Schares, E. Kioussis and F.J. Conraths ..... 79
- Contamination of dog hair with eggs of *Toxocara canis*  
G. Roddie, P. Stafford, C. Holland and A. Wolfe ..... 85
- The investigation of *Toxocara canis* eggs in coats of different dog breeds as a potential transmission route in human toxocarosis  
M. Aydenizöz-Özkayhan, B.B. Yağcı and S. Erat ..... 94
- P-glycoprotein selection in strains of *Haemonchus contortus* resistant to benzimidazoles  
W.J. Blackhall, R.K. Prichard and R.N. Beech ..... 101

(Contents continued on page 172)

For a full and complete Guide for Authors, please refer to the  
*Veterinary Parasitology* website; access under  
<http://www.elsevier.com/locate/vetpar>



0304-4017(20080325)152:1/2;1-A

Available online at



[www.sciencedirect.com](http://www.sciencedirect.com)

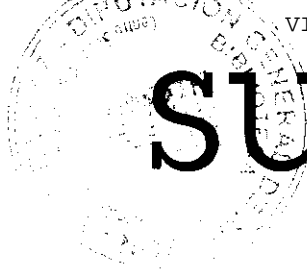
5135



Contents continued from back cover

Patent <i>Toxocara canis</i> infections in previously exposed and in helminth-free dogs after infection with low numbers of embryonated eggs A.S. Fahrion, S. Staebler and P. Deplazes	108
Molecular cloning, expression and characterization of a functional GSTmu class from the cattle tick <i>Boophilus annulatus</i> Y.E. Shahein, A.E.S. EL-Hakim, A.M.K. Abouelella, R.R. Hamed, S.A.-M. Allam and N.M. Farid	116
Efficacy of amitraz applied as a dip against an amitraz-resistant strain of <i>Rhipicephalus (Boophilus) microplus</i> (Acari: Ixodidae) infested on cattle R.B. Davey, R.J. Miller and J.E. George	127
Breed differences in the pharmacokinetics of ivermectin administered subcutaneously to Holstein and Belgian Blue calves J. Vercruyse, P. Deprez, D. Everaert, F. Bassissi and M. Alvinerie	136
<b>Short communications</b>	
Prevalence of bovine trypanosomosis and trypanocidal drug sensitivity studies on <i>Trypanosoma congolense</i> in Wolyta and Dawero zones of southern Ethiopia A. Miruk, A. Hagos, H.T. Jacob, F. Asnake and A.K. Basu	141
Seroprevalence and risk factors associated with <i>Neospora caninum</i> infection in different dog populations in Spain E. Collantes-Fernández, M. Gómez-Bautista, G. Miró, G. Álvarez-García, J. Pereira-Bueno, C. Frisuelos and L.M. Ortega-Mora	148
Sequence conservation in the rRNA first internal transcribed spacer region of <i>Babesia gibsoni</i> genotype Asia isolates B. Bostrom, C. Wolf, C. Greene and D.S. Peterson	152
Interferon-gamma and interleukin-4 expression during <i>Fasciola gigantica</i> primary infection in crossbred bovine calves as determined by real-time PCR S.L. Ingale, P. Singh, O.K. Raina, U.R. Mehra, A.K. Verma, S.C. Gupta and S.V. Mulik	158
Occurrence of fatal canine <i>Angiostrongylus vasorum</i> infection in Italy D. Traversa, A. Torbidone, D. Malatesta and C. Guglielmini	162
Intraarticular <i>Dirofilaria immitis</i> microfilariae in two dogs S. Hodges and M. Rishniw	167
<b>Book review</b>	
Veterinary Parasitology F.H.M. Borgsteede	171

8 MAYO 2008



# sumario

## RIEGOS

### en portada

Agricultura prevé que el arranque de viñedo afecte a un máximo de 60.000 hectáreas.

Sorpresa ante la creación del nuevo Ministerio de Medio Ambiente y Medio Rural y Marino.

**Alfredo López.** .....

### fitosanitarios

Los residuos de plaguicidas continúan causando problemas. **Ramón Coscollá.** .....

### reportaje

Expo Zaragoza 2008, un marco incomparable para buscar soluciones al debate sobre el agua.

**Fernando Varés.** .....

### cultivos

Control de plagas y enfermedades en frutales de pepita. **Antonio Dolset, Ramón Torá y Joaquín García.** .....



21

**Presente y futuro de los regadíos españoles**

**La reutilización planificada del agua para regadío**

**Reducción del aporte hídrico a los cítricos mediante riego deficitario y considerando la pluviometría**

**Cálculo del coste de la energía eléctrica antes y después de la desaparición de las tarifas de riego**

### mecanización

Innovaciones técnicas en cosechadoras de cereales. **Pedro La Calle.** .....

### forestales

El sector forestal mundial atraviesa un año lleno de turbulencias. **Asociación Gallega Monte Industria, Cluster de la Madera de Galicia y Feamarga.** .....

### actualidad

- CARTA DEL DIRECTOR .....
- METEOROLOGÍA Y EMBASES .....
- EMPRESAS
  - Filtromatic, Saleplas, Honda .....
  - Uralita, Dow AgroSciences .....



Foto de portada: V. da Rural.

**Directores:** Jaime Lamo de Espinosa, Dr. Ingeniero Agrónomo y Economista. Catedrático ETSIA (UPM).  
**Directores adjuntos:** **Alberto Ballarín Marcial.** Abogado. Madrid.  
**Julián Briz E.** Catedrático ETSIA (UPM).  
**Tomás G.ª Azcárate.** Dr. Ing. Agrónomo, Dirección General Agricultura (UE).  
**Enrique Falcó y Carrión.** Dr. Ingeniero Agrónomo. Empresario agrario.  
**Fernando Gil Albert.** Catedrático ETSIA (UPM).  
**Emilio Godia.** Empresario agrario. **Javier López de la Puerta.** Empresario agrario. **Manuel Ramón Llamas Madurga.** Catedrático Hidrogeología.  
**Rafael Manuel Jiménez Díaz.** Catedrático ETSIAM (UC). **Jaime Ortiz-Cañavate.** Catedrático ETSIA (UPM). **Santiago Planas.** Dr. Ingeniero Agrónomo. **Pedro Urbano.** Catedrático ETSIA (UPM). **Luis López Bellido.** Catedrático ETSIAM (UC). **Ramón Alonso Sebastián.** Catedrático ETSIA (UPM). **Carlos Tió Saralegui.** Catedrático ETSIA (UPM).

**EUMEDIA, S.A.**  
**Directores:** Eugenio Occhialini.  
**Directores adjuntos:** José M.ª Hernández.  
**Administración:** Ricardo Migueláñez.

CLAUDIO COELLO, 16, 1.ª Planta - 28001 MADRID - TELÉFOS.: 91 426 44 30/91 578 05 34. - TELEFAX: 91 575 32 97. - [www.eumedia.es](http://www.eumedia.es)

**e-mail:** [redacclon@eumedia.es](mailto:redacclon@eumedia.es)  
**Luis Mosquera.**  
**Elena Mármol.**  
**Arancha Martínez.**  
**Alfredo López, Alejandro Vicente, Jose E. Chao, Diego Juste, Fernando Varés.**

**Marina García.**  
**publicidad@eumedia.es**

**Directora:** Nuria Narbón.  
**Carmen Férreo, Paloma Montón, Yolanda Pineda, Alberto Rabasco, Cristina Cano, Ana Rodríguez.**

**Sergio Munill.** Teléf.: 93 246 68 84. Fax: 93 246 68 84.  
**Yolanda Robles.** Teléf. y fax: 958 15 30 35.

**Concha Barra** (administración), **Marlano Mero** (informática y suscripciones), **Mercedes Sendarrubias** y **Verónica Casas** (suscripciones) [suscripciones@eumedia.es](mailto:suscripciones@eumedia.es)  
**ISSN:** 1133-8938. **Depósito Legal:** M-3390-1994

IMPRIMEX.

ELMEDIA, S.A., no se identifica necesariamente con las opiniones recogidas en los artículos firmados. Reservados todos los derechos fotográficos e literarios.

Vida Rural es miembro de Eurofarm. Asociación de las revistas agrarias más importantes de Europa.

## WEED RESEARCH

**Insights**

- 97 *C Délye & K Boucansaud* A molecular assay for the proactive detection of target site-based resistance to herbicides inhibiting acetolactate synthase in *Alopecurus myosuroides*

**Research Papers**

- 102 *B De Cauwer, D Reheul, I Nijs & A Milbau* Management of newly established field margins on nutrient-rich soil to reduce weed spread and seed rain into adjacent crops
- 113 *D B Westbury, B A Woodcock, S J Harris, V K Brown & S G Potts* The effects of seed mix and management on the abundance of desirable and pernicious unsown species in arable buffer strip communities
- 124 *P Kristoffersen, A M Rask & S U Larsen* Non-chemical weed control on traffic islands: a comparison of the efficacy of five weed control techniques
- 131 *J Klimešová, A Kociánová & J Martinková* Weeds that can do both tricks: vegetative versus generative regeneration of the short-lived root-sprouting herbs *Rorippa palustris* and *Barbarea vulgaris*
- 136 *J Torra, J L Gonzalez-Andujar & J Recasens* Modelling the population dynamics of *Papaver rhoeas* under various weed management systems in a Mediterranean climate
- 147 *A J Karley, C Hawes, P P M Iannetta & G R Squire* Intraspecific variation in *Capsella bursa-pastoris* in plant quality traits for insect herbivores
- 157 *J I Muoghalu* Growth, reproduction and resource allocation of *Tithonia diversifolia* and *Tithonia rotundifolia*
- 163 *M Fernández-Aparicio, A Andolfi, A Evidente, A Pérez-De-Luque & D Rubiales* Fenugreek root exudates show species-specific stimulation of *Orobanchae* seed germination
- 169 *M L Molinero-Ruiz, B Pérez-Vich, R Pineda-Martos & J M Melero-Vara* Indigenous highly virulent accessions of the sunflower root parasitic weed *Orobanchae cumana*
- 179 *M C Vaz Patto, R Diaz-Ruiz, Z Satovic, B Román, A J Pujadas-Salvà & D Rubiales* Genetic diversity of Moroccan populations of *Orobanchae foetida*: evolving from parasitising wild hosts to crop plants
- 187 *T Imaizumi, G X Wang, T Ohsako & T Tominaga* Genetic diversity of sulfonylurea-resistant and -susceptible *Monochoria vaginalis* populations in Japan

This journal is available online at Blackwell Synergy. Visit [www.blackwell-synergy.com](http://www.blackwell-synergy.com) to search the articles and register for table of contents e-mail alerts.

**PHYSIOLOGY, CHEMISTRY, AND BIOCHEMISTRY**

- The Basis for Glyphosate Resistance in Rigid Ryegrass (*Lolium rigidum*) from California. **Marulak Simarmata and Donald Penner** 181
- Interactive Effect of Photoperiod and Fluridone on Growth, Reproduction, and Biochemistry of Dioecious Hydrilla (*Hydrilla verticillata*). **Gregory E. MacDonald, Atul Puri, and Donn G. Shilling** 189
- Physiological Response of Different Croftonweed (*Eupatorium adenophorum*) Populations to Low Temperature. **Hui Li, Sheng Qiang, and Yaling Qian** 196
- Differential Response of a Virginia Common Lambsquarters (*Chenopodium album*) Collection to Glyphosate. **Grace A. Hite, Steven R. King, Edward S. Hagood, and Golde I. Holtzman** 203
- Genetics of Resistance to Acetohydroxyacid Synthase Inhibitors in Populations of Eastern Black Nightshade (*Solanum ptychanthum*) from Ontario. **Jamshid Ashigh, Istvan Rajcan, and François J. Tardif** 210

**WEED BIOLOGY AND ECOLOGY**

- Germination Characteristics of the Dimorphic Seeds of Spreading Orach (*Atriplex patula*). **Robert E. Nurse, W. Daniel Reynolds, Colleen Doucet, and Susan E. Weaver** 216
- Early Vigor and Ozone Response in Horseweed (*Conyza canadensis*) Biotypes Differing in Glyphosate Resistance. **David A. Grantz, Anil Shrestha, and Hai-Bang Vu** 224
- Glyphosate-Resistant Horseweed (*Conyza canadensis*) Emergence, Survival, and Fecundity in No-Till Soybean. **Vince M. Davis and William G. Johnson** 231
- Temperature and Moisture Status Affect Afterripening of Leafy Spurge (*Euphorbia esula*) Seeds. **Michael E. Foley** 237
- Seed Germination and Seedling Emergence of Giant Sensitiveplant (*Mimosa invisa*). **Bhagirath S. Chauhan, and David E. Johnson** 244

**WEED MANAGEMENT**

- Weed Interference, Pulse Species, and Plant Density Effects on Rotational Benefits. **Sheri M. Strydhorst, Jane R. King, Ken J. Lopetinsky, and K. Neil Harker** 249
- Selective Herbicides Reduce Alligator Weed (*Alternanthera philoxeroides*) Biomass by Enhancing Competition. **Shon Schooler, Tony Cook, Anne Bourne, Graham Prichard, and Mic Julien** 259
- Defining the Rate Requirements for Synergism between Mesotrione and Atrazine in Redroot Pigweed (*Amaranthus retroflexus*). **Josie A. Hugie, German A. Bollero, Patrick J. Tranel, and Dean E. Riechers** 265
- Suppression of Powell Amaranth (*Amaranthus powellii*), Shepherd's-Purse (*Capsella bursa-pastoris*), and Corn Chamomile (*Anthemis arvensis*) by Buckwheat Residues: Role of Nitrogen and Fungal Pathogens. **Virender Kumar, Daniel C. Brainard, and Robin R. Bellinder** 271

**SYMPOSIUM**

- Emerging Technologies: An Opportunity for Weed Biology Research. **James V. Anderson** 281
- Utilization of DNA Microarrays in Weed Science Research. **Ryan M. Lee and Patrick J. Tranel** 283
- Real-Time PCR as a Tool to Study Weed Biology. **Wun S. Chao** 290
- Bioinformatics and Its Relevance to Weed Science. **Ignacio M. Larrinua and Scott B. Belmar** 297
- Proteomics: An Emerging Technology for Weed Science Research. **Qin Zhang and Dean E. Riechers** 306
- Gene Networks for the Integration and Understanding of Gene Expression Characteristics. **Shisong Ma and Hans J. Bohnert** 314
- What We Know about Weeds: Insights from Genetic Markers. **Tracey A. Bodo Slotta** 322

**SPECIAL TOPICS**

- Purple Deadnettle (*Lamium purpureum*) Emergence and Removal Time Effects on Soybean Cyst Nematode (*Heterodera glycines*). **S. Kent Harrison, Ramarao Venkatesh, and Richard M. Riedel** 327

