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Liguria e Valle d'Aosta

Uso razionale degli antibiotici in zootecnia



Barbero Raffaella

DVM, PhD, MSc

Coordinatore Nazionale GdL Farmaco FNOVI

Istituto Zooprofilattico Sperimentale Piemonte Liguria e Valle d'Aosta

FNOVI
FEDERAZIONE NAZIONALE ORDINI VETERINARI ITALIANI

Milano, 06 ottobre 2017

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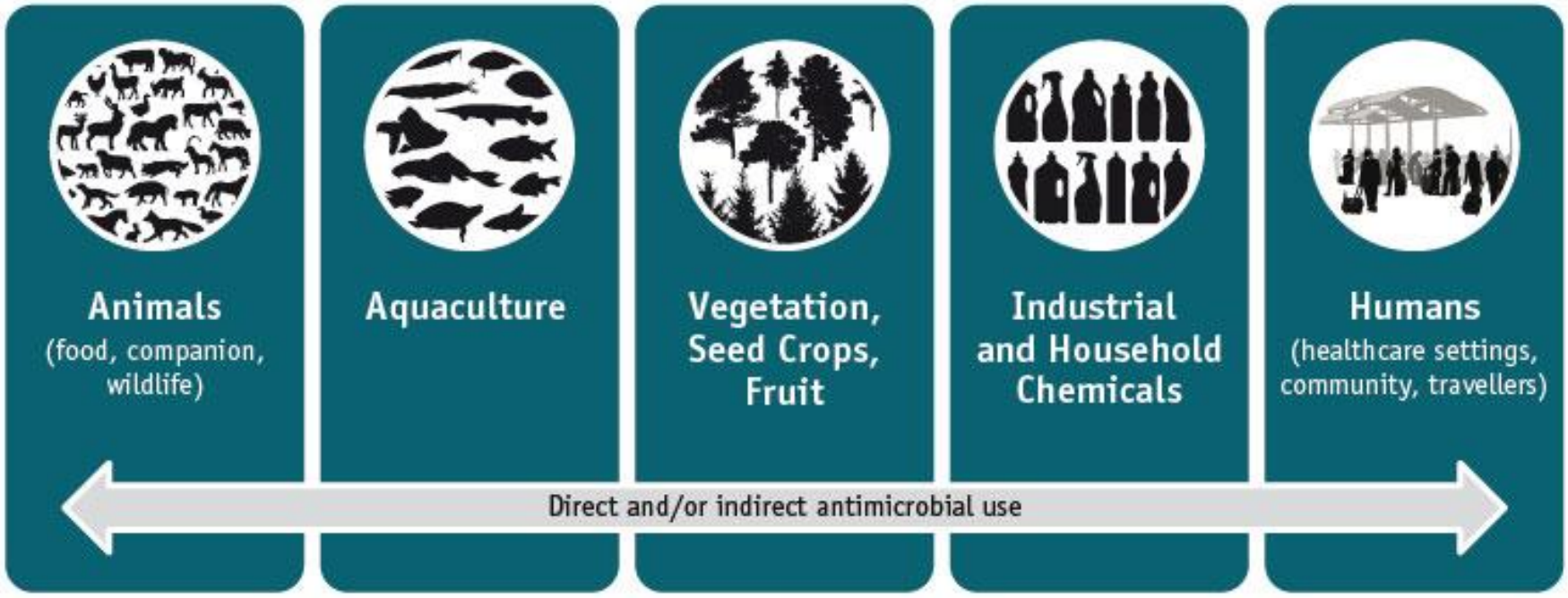
USO DEGLI ANTIBIOTICI

OSPEDALI
UOMO – AUTOMEDICAZIONE
ANIMALI D'AFFEZIONE (cane gatto cavallo)
ZOOTECNIA (animali che producono alimenti per l'uomo
AGRICOLTURA (insieme a pesticidi)
INDUSTRIA



Utilizzo diretto/indiretto di antibiotici

USO DEGLI ANTIBIOTICI NEGLI ANIMALI

ANIMALI D'AFFEZIONE

(in genere cane, gatto, cavallo)



ZOOTECNIA

(animali che producono alimenti per l'uomo)



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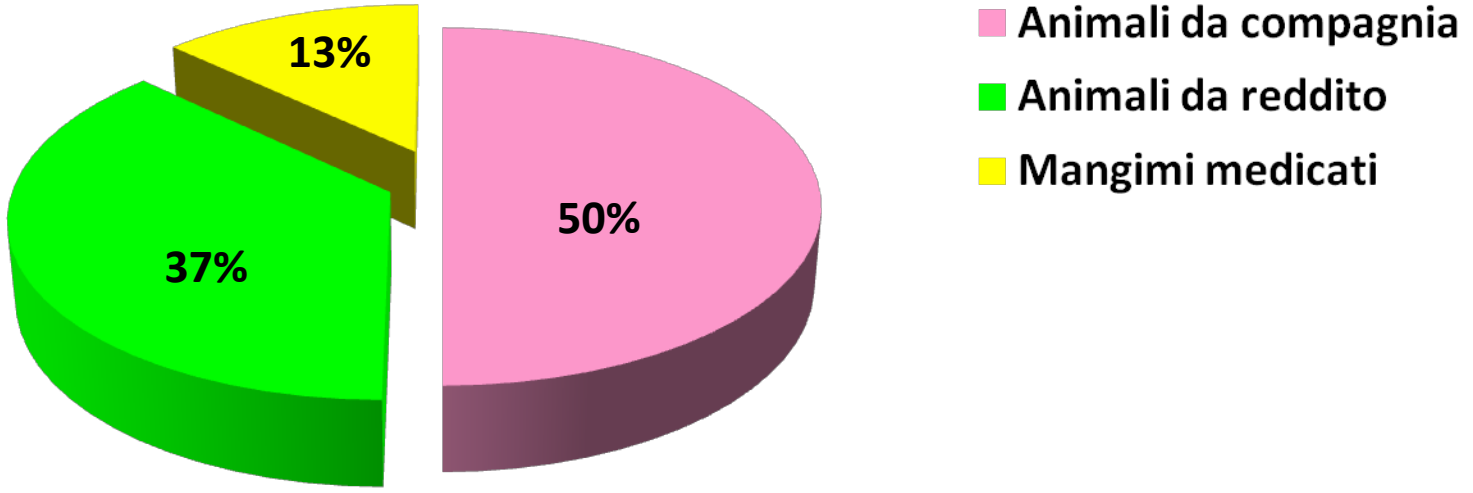
ANTIMICROBICORESISTENZA

NON SOLO UN PROBLEMA PER GLI ALIMENTI

DATI DI VENDITA PROVENIENTI DAL SETTORE VETERINARIO



Spesa in Farmaci: Totale 591 milioni di €

Animali da compagnia: 295 milioni di € (50%)

Animali da reddito: 218 milioni di € (37%)

Premiscele per alimentosi: 78 milioni € (13%)

FONTE: AISA dati del 2015
(AISA Associazione Industrie Sanità Animale)

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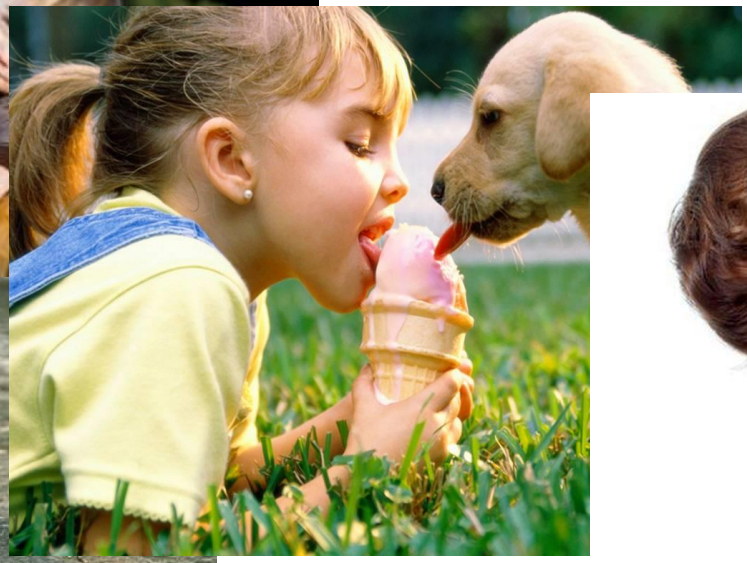





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Clonal spread of methicillin-resistant *Staphylococcus pseudintermedius* in Europe and North America: an international multicentre study

Vincent Perreten[1]*, Kristina Kadlec[2], Stefan Schwarz[2], Ulrika Grönlund Andersson[3], Maria Finn[3], Christina Greko[3], Arshnee Moodley[4], Stephen A. Kania[5], Linda A. Frank[5], David A. Bemis[5], Alessia Franco[6], Manuela Iurescia[6], Antonio Battisti[6], Birgitta Duim[7], Jaap A. Wagenaar[7], Engeline van Duijkeren[7], J. Scott Weese[8], J. Ross Fitzgerald[9], Alexandra Rossano[1] and Luca Guardabassi[4]

ORIGINAL ARTICLE

Carriage of Methicillin-Resistant *Staphylococcus pseudintermedius* in Small Animal Veterinarians: Indirect Evidence of Zoonotic Transmission

N. C. Paul[1], A. Moodley[1], G. Ghibaudo[2] and L. Guardabassi[1]

[1] Department of Veterinary Disease Biology, Faculty of Life Sciences, University of Copenhagen, Frederiksberg C, Denmark

© 2011 Blackwell Verlag GmbH • Zoonoses Public Health. **58** (2011) 533–539



OPEN ACCESS Freely available online

PLOS ONE

Alarming Proportions of Methicillin-Resistant *Staphylococcus aureus* (MRSA) in Wound Samples from Companion Animals, Germany 2010–2012

Szilvia Vincze[1]*, Ivonne Stamm[2], Peter A. Kopp[2], Julia Hermes[3], Cornelia Adlhoch[3], Torsten Semmler[1], Lothar H. Wieler[1], Antina Lübke-Becker[1], Birgit Walther[1]

1 Institute of Microbiology and Epizootics, Veterinary Faculty, Free University Berlin, Germany, **2** Vet Med Labor GmbH, Division of IDEXX Laboratories, Ludwigsburg, Germany, **3** Department of Infectious Diseases Epidemiology, Robert Koch Institute, Berlin, Germany

Abstract

Staphylococcus (*S.*) *aureus* is an important cause of wound infections in companion animals, and infections with methicillin-resistant *S. aureus* (MRSA) are of particular concern due to limited treatment options and their zoonotic potential. However, comparable epidemiological data on MRSA infections in dogs, cats and horses is scarce, also limiting the knowledge about possible links to MRSA isolates from human populations. To gain more knowledge about the occurrence and genotypic variation of MRSA among wound swabs of companion animal origin in Germany we performed a survey (2010–2012) including 5,229 samples from 1,170 veterinary practices. *S. aureus* was identified in 201 (5.8%) canine, 140 (12.2%) feline and 138 (22.8%) equine swabs from a total of 3,479 canine, 1,146 feline and 604 equine wounds, respectively. High MRSA rates were identified with 62.7%, 46.4% and 41.3% in *S. aureus* of canine, feline and equine origin, respectively. Further genotyping including *spa* typing and multilocus sequence typing (MLST) revealed a comparable distribution of *spa* types among canine and feline MRSA with CC22 (47.6%; 49.2%) and CC5 (30.2%; 29.2%) as predominant lineages followed by CC398 (13.5%; 7.7%) and CC8 (4.0%; 9.2%). In contrast, the majority of equine MRSA belonged to CC398 (87.7%). Our data highlight the importance of *S. aureus* and MRSA as a cause of wound infections, particularly in cats and horses in Germany. While "human-associated" MRSA lineages were most common in dogs and cats, a remarkable number of CC398-MRSA was detected in horses, indicating a replacement of CC8-MRSA as the predominant lineage within horses in Germany. These data enforce further longitudinal epidemiological approaches to examine the diversity and temporal relatedness of MRSA populations in humans and animals to assess probable sources of MRSA infections. This would enable a sound risk assessment and establishment of intervention strategies to limit the additional spread of MRSA.

Journal of Antimicrobial Chemotherapy (2004) **54**, 321–332
DOI: 10.1093/jac/dkh332
Advance Access publication 14 July 2004

JAC

Pet animals as reservoirs of antimicrobial-resistant bacteria

Luca Guardabassi[1]*, Stefan Schwarz[2] and David H. Lloyd[3]

[1]Department of Veterinary Pathobiology, The Royal Veterinary and Agricultural University, Stigbøjlen 4, 1870 Frederiksberg C, Denmark; [2]Institut für Tierzucht, Bundesforschungsanstalt für Landwirtschaft (FAL), Höltystr. 10, 31535 Neustadt-Mariensee, Germany; [3]Department of Veterinary Clinical Sciences, The Royal Veterinary College, Hawkshead Campus, North Mymms, Herts AL9 7TA, UK

Pet animal numbers have substantially increased in modern society and attention is increasingly devoted to pet welfare. Because of these changes, antimicrobial agents are frequently used in small animal veterinary practice, often including antimicrobial preparations used in human medicine, with heavy use of broad-spectrum agents such as aminopenicillins plus clavulanic acid, cephalosporins and fluoroquinolones. Several longitudinal studies conducted at veterinary ho[illegible]itals have indicated that resistance to various antimicrobial agents has emerged amongst pet an[illegible]lates of *Staphylococcus intermedius*, *Escherichia coli* and other bacteria, including specie[illegible]tial for zoonotic transmission and resistance phenotypes of clinical interest, such as [illegible]istant *S[illegible]ylococcus aureus*, vancomycin-resistant enterococci and multidrug-resistant *[illegible]ia* Typhi[illegible]T104. Based on a review of the current literature, the role of pets in the dissem[illegible]tion of [illegible]resistance has been given little attention when compared with that of food animals. [illegible]ontrast is evident between the current policies on antimicrobial usage in food and [illegible]imals. An from a few countries where limited data on antimicrobial usage and occ[illegible]sistance i[illegible]teria from pet animals are provided, national surveillance programmes [illegible]s on food[illegible] However, data on pet animals are clearly needed for guiding antimicrobial [illegible] policy in[illegible] veterinary practice as well as for assessing the risk of transmission of antimicrob[illegible]e to humans.

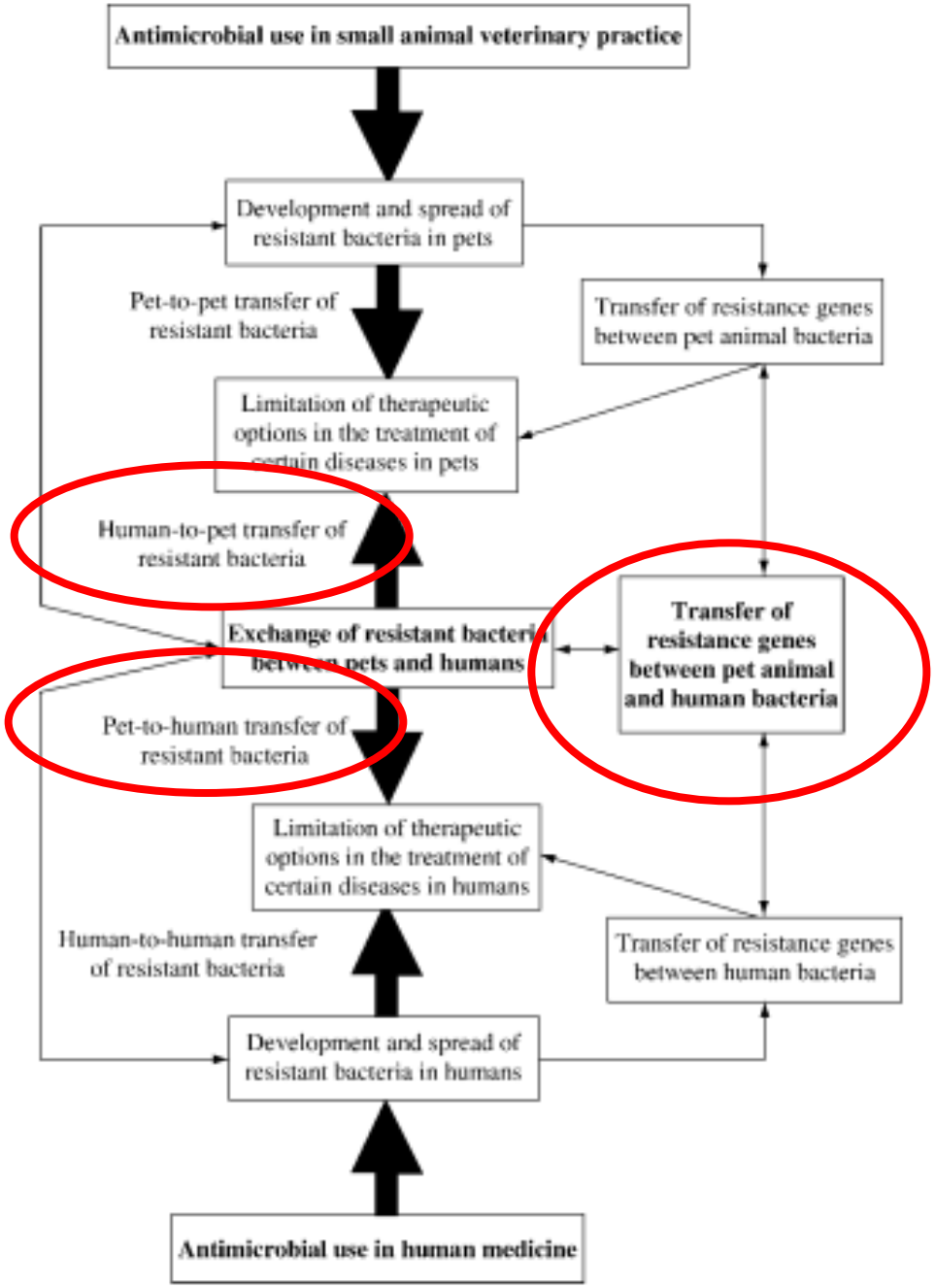
Keywords: dogs, cats, antimicrobial resistance

MRSA

Salmonella

Escherichia coli

Staphylococcus intermedius


Antimicrobial use in small animal veterinary practice
Development and spread of resistant bacteria in pets
Pet-to-pet transfer of resistant bacteria
Transfer of resistance genes between pet animal bacteria
Limitation of therapeutic options in the treatment of certain diseases in pets
Human-to-pet transfer of resistant bacteria
Exchange of resistant bacteria between pets and humans
Transfer of resistance genes between pet animal and human bacteria
Pet-to-human transfer of resistant bacteria
Limitation of therapeutic options in the treatment of certain diseases in humans
Human-to-human transfer of resistant bacteria
Transfer of resistance genes between human bacteria
Development and spread of resistant bacteria in humans
Antimicrobial use in human medicine





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ZOOTECNIA



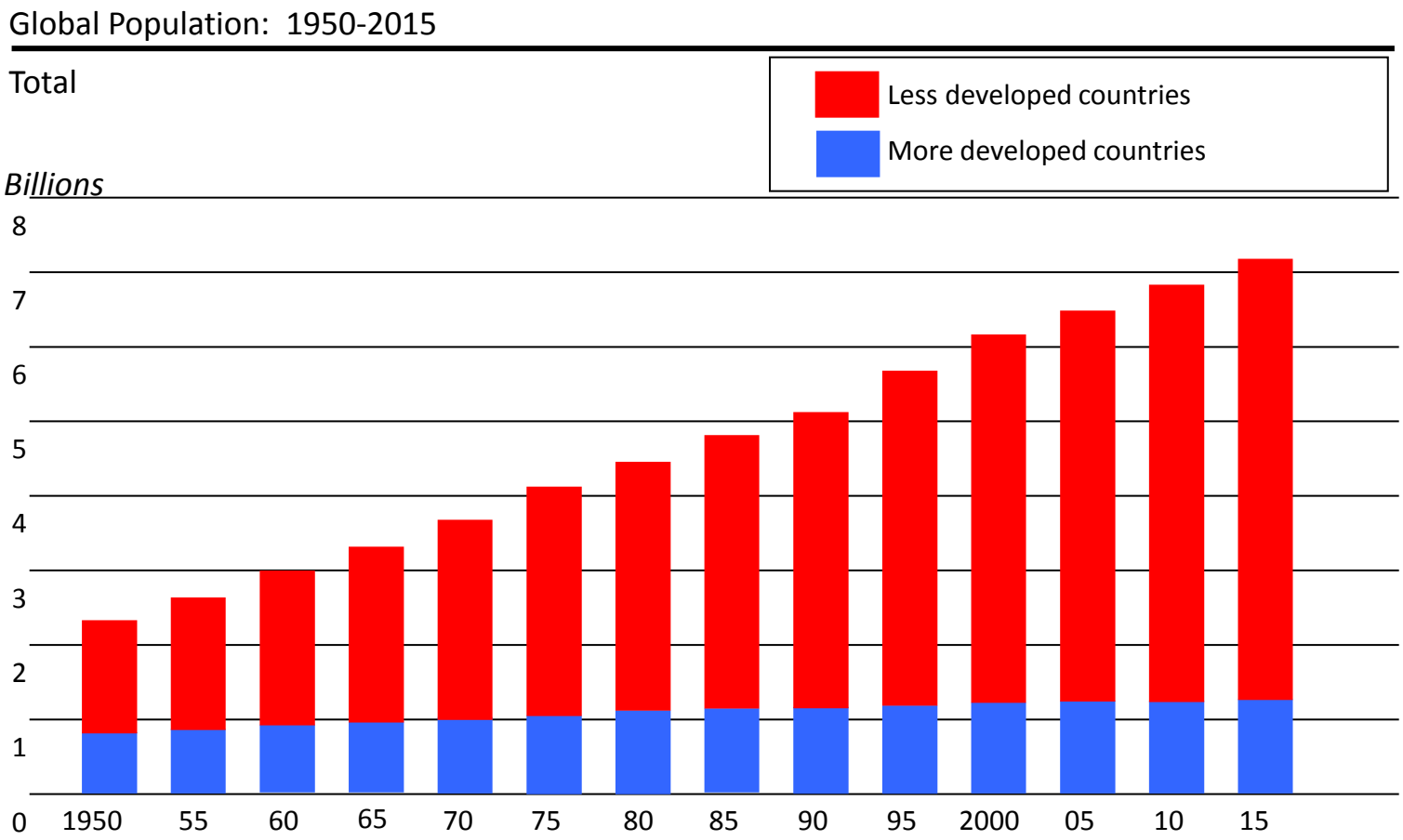
ANIMALI CHE PRODUCONO ALIMENTI PER L'UOMO



Nel 2006, oltre 21 miliardi di animali sono stati allevati per alimentare oltre 6 miliardi di persone, miliardi di tonnellate di prodotti d'origine animale sono stati distribuiti globalmente.

Le proiezioni per il 2030 indicano che la domanda di proteine animali aumenterà del 50%, soprattutto nei paesi in via di sviluppo

Trends in Global Population



Source: US Bureau of the Census

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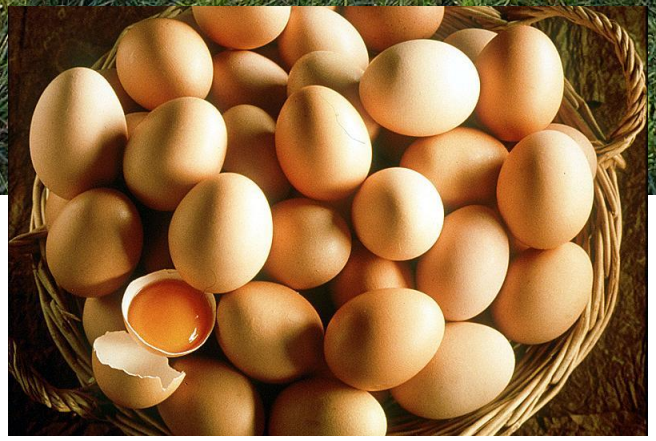

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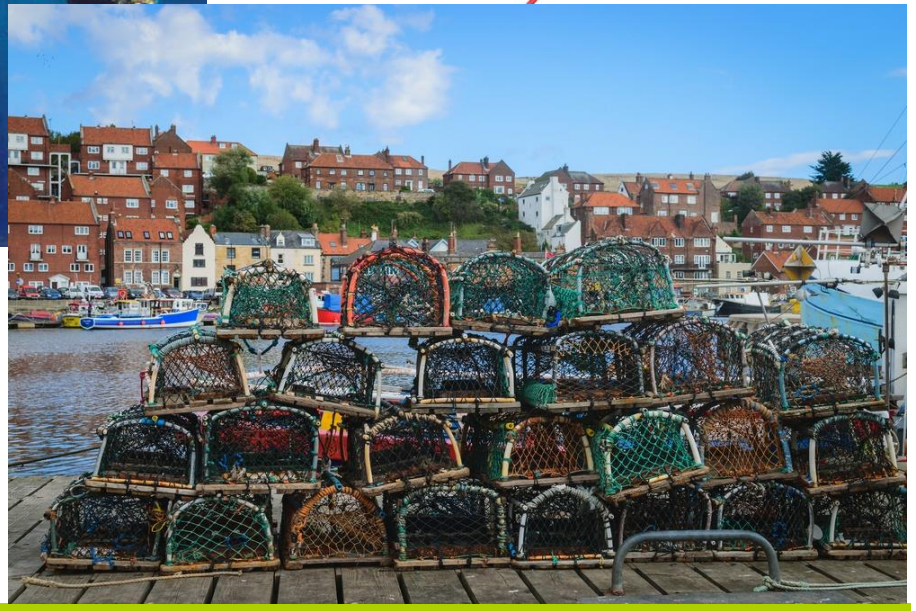

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PLOS ONE

RESEARCH ARTICLE

Emergence of a Clonal Lineage of Multidrug-Resistant ESBL-Producing *Salmonella* Infantis Transmitted from Broilers and Broiler Meat to Humans in Italy between 2011 and 2014

Alessia Franco[1], Pimlapas Leekitcharoenphon[2], Fabiola Feltrin[1], Patricia Alba[1], Gessica Cordaro[1], Manuela Iurescia[1], Rita Tolli[1], Mario D'Incau[3], Monica Staffolani[4], Elisabetta Di Giannatale[5], Rene S. Hendriksen[2], Antonio Battisti[1]*

1 Istituto Zooprofilattico Sperimentale del Lazio e della Toscana "M. Aleandri", National Reference Laboratory for Antimicrobial Resistance, Via Appia Nuova 1411, 00178, Rome, Italy, **2** National Food Institute, Technical University of Denmark, WHO Collaborating Center for Antimicrobial Resistance in Food borne Pathogens, and European Union Reference Laboratory for Antimicrobial Resistance, Kgs. Lyngby, Denmark, **3** Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia–Romagna "Bruno Ubertini", Via Bianchi 9, 25124, Brescia, Italy, **4** Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche, Sezione di Macerata, Via dei Velini, 15, 62100, Macerata, Italy, **5** Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale", Via Campo Boario, 64100, Teramo, Italy

CrossMark
click for updates

Preventive Veterinary Medicine 117 (2014) 403–412

Contents lists available at ScienceDirect

Preventive Veterinary Medicine

journal homepage: www.elsevier.com/locate/prevetmed



A longitudinal field trial assesing the impact of feeding waste milk containing antibiotic residues on the prevalence of ESBL-producing *Escherichia coli* in calves

L.A. Brunton [a,*], H.E. Re

Research in Veterinary Science 109 (2016) 107–113

Contents lists available at ScienceDirect

Research in Veterinary Science

journal homepage: www.elsevier.com/locate/rvsc



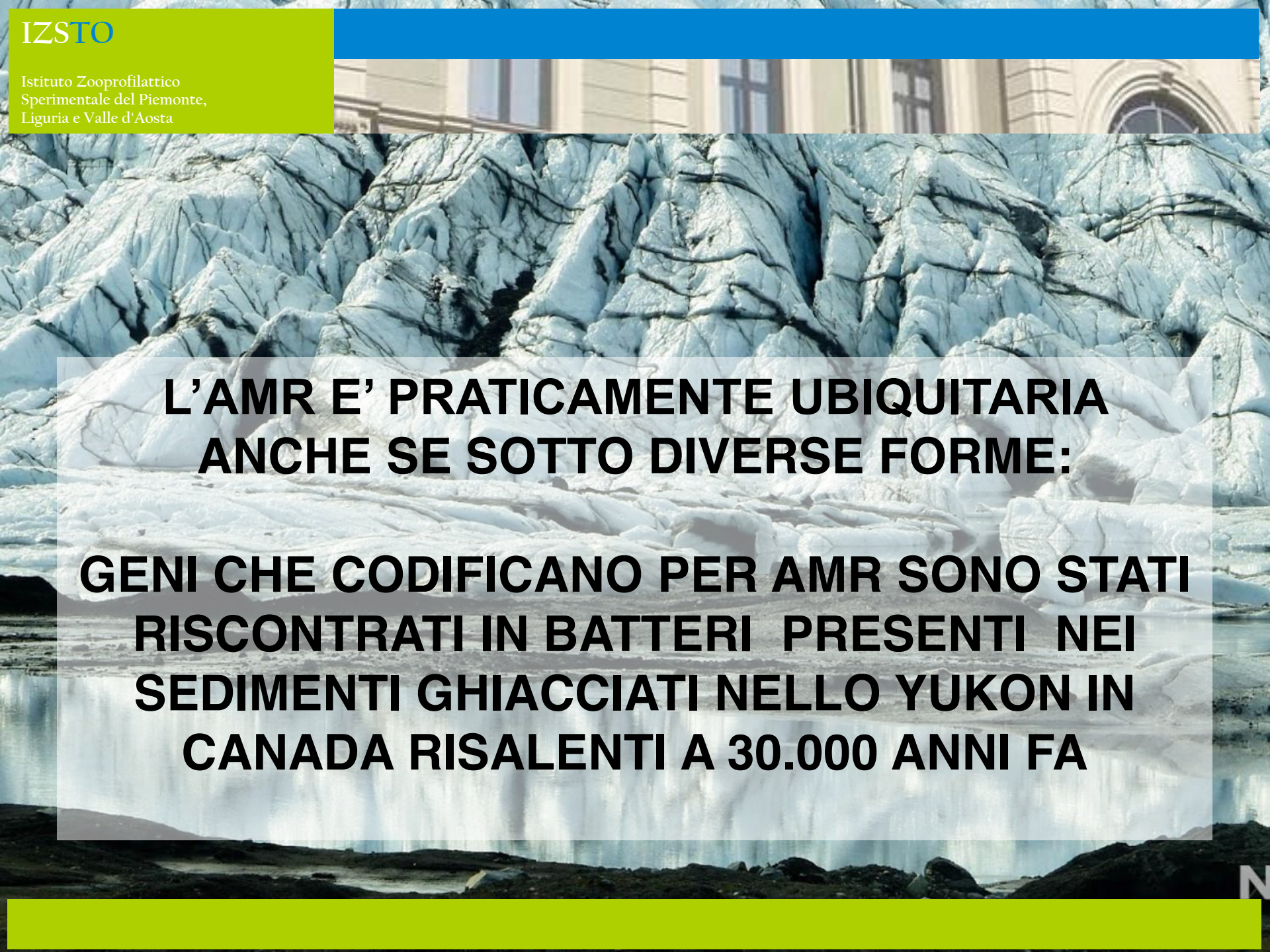
Longitudinal study of CTX-M ESBL-producing *E. coli* strains on a UK dairy farm

R.A. Horton *, D. Duncan, L.P. Randall, S. Chappell, L.A. Brunton, R. Warner, N.G. Coldham, C.J. Teale

Animal and Plant Health Agency (APHA) Weybridge, New Haw, Addlestone, Surrey KT15 3NB, United Kingdom

PASSAGGIO DI MATERIALE GENETICO





L'AMR E' PRATICAMENTE UBIQUITARIA ANCHE SE SOTTO DIVERSE FORME:

GENI CHE CODIFICANO PER AMR SONO STATI RISCONTRATI IN BATTERI PRESENTI NEI SEDIMENTI GHIACCIATI NELLO YUKON IN CANADA RISALENTI A 30.000 ANNI FA

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IMPATTO AMBIENTALE

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IMPATTO AMBIENTALE



SCIENZA E RICERCA

Resistenza agli antibiotici: pesticidi sotto accusa

22 APRILE 2015

Non è trascorso molto tempo da quando l'European Centre for Disease Prevention and Control (Ecdc) e l'Organizzazione mondiale della sanità (Oms) sottolineavano l'impatto che la resistenza agli antibiotici può avere sulla salute pubblica. In termini di aumento ne costi di assistenza sanitaria, di ricoveri ospedalieri

Sublethal Exposure to Commercial Formulations of the Herbicides Dicamba, 2,4-Dichlorophenoxyacetic Acid, and Glyphosate Cause Changes in Antibiotic Susceptibility in *Escherichia coli* and *Salmonella enterica* serovar Typhimurium

Brigitta Kurenbach,[a] Delphine Marjoshi,[a] Carlos F. Amábile-Cuevas,[b] Gayle C. Ferguson,[c] William Godsoe,[d] Paddy Gibson,[a] Jack A. Heinemann[a]

School of Biological Sciences, University of Canterbury, Christchurch, New Zealand[a]; Fundación Lusara, Mexico City, Mexico[b]; Institute of Natural and Mathematical Sciences, Massey University, Palmerston North, New Zealand[c]; Bio-Protection Centre, Lincoln University, Lincoln, New Zealand[d]

uch as herbicides, are routinely tested for toxicity but not for sublethal effects on microbes. Many biocides n adaptive multiple-antibiotic resistance phenotype. This can be due to either an increase in the expression uced synthesis of outer membrane porins, or both. Exposures of *Escherichia coli* and *Salmonella enterica* serovar Typhimurium to commercial formulations of three herbicides—dicamba (Kamba), 2,4-dichlorophenoxyacetic acid (2,4-D), and glyphosate (Roundup)—were found to induce a changed response to antibiotics. Killing curves in the presence and absence of sublethal herbicide concentrations showed that the directions and the magnitudes of responses varied by herbicide, an-

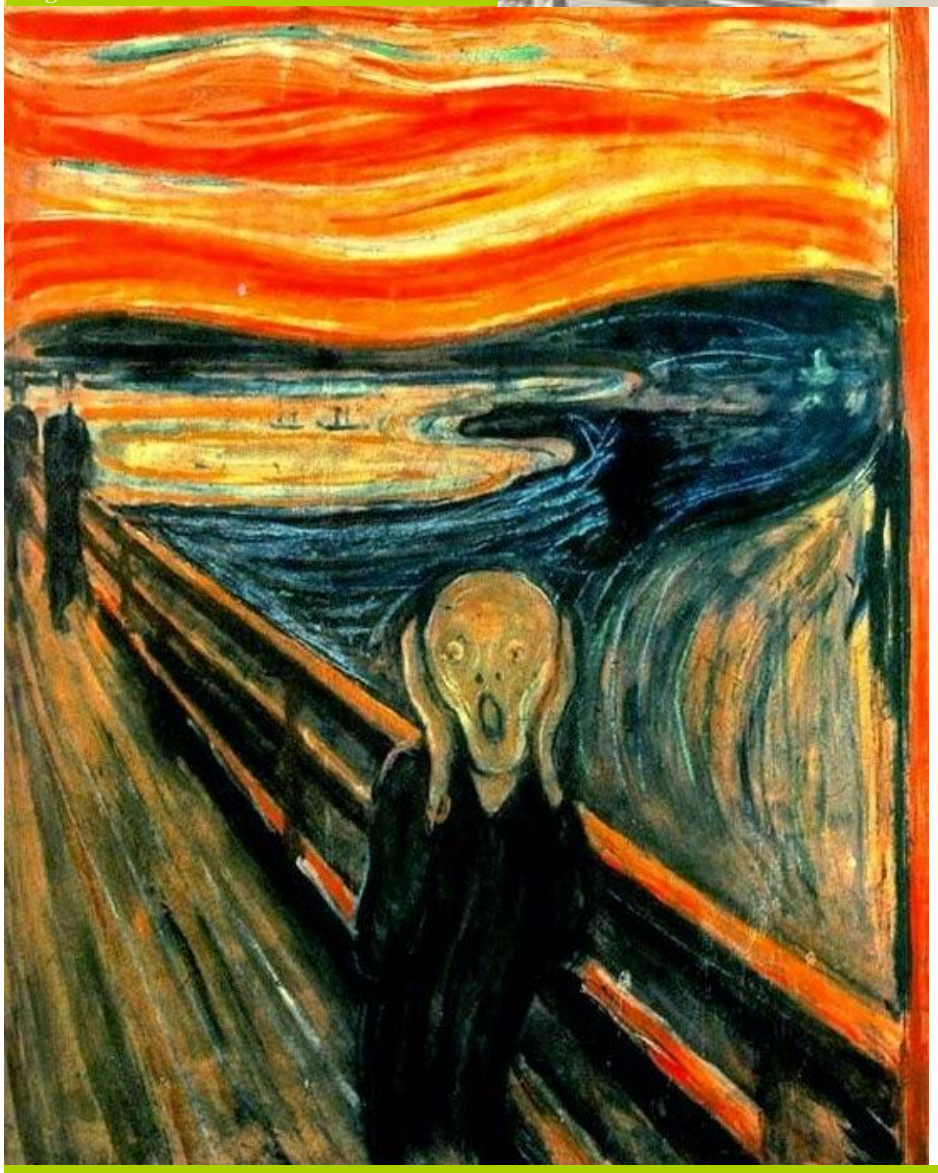
AGRICOLTURA

IMPATTO AMBIENTALE

IMPATTO DIRETTO: contatto del farmaco con organismi del suolo e delle acque

IMPATTO INDIRETTO: emissione tramite deiezionii, sia di uomini che di animali, di batteri antibiotico-resistenti

TRASFERIMENTO RESISTENZE: fra batteri patogeni e ambientali



Tracce di antibiotici, come quelli che si trovano negli **scarichi delle fognature cittadine**, sono sufficienti a permettere ai batteri di mantenere la resistenza agli antibiotici nell'ambiente.

Antimicrobial Agents and Chemotherapy, 2015

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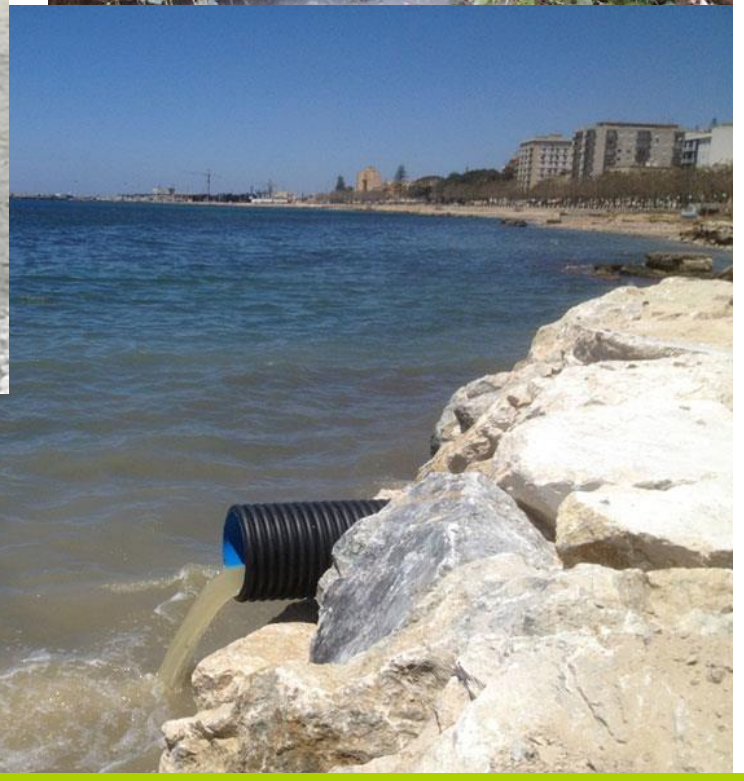
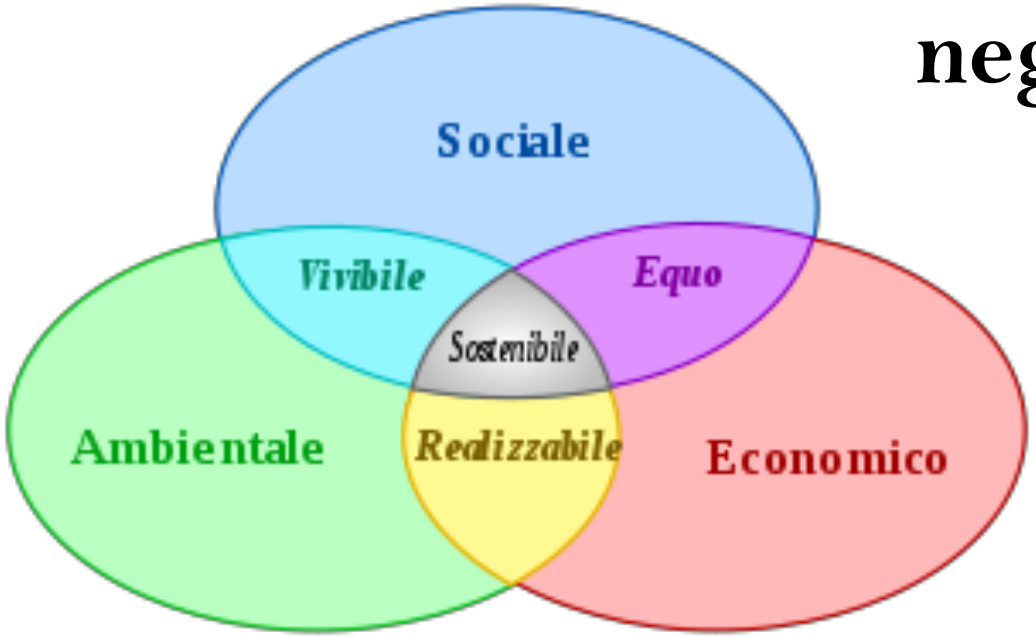




One Health



Un allevamento più SOSTENIBILE consente una riduzione di utilizzo di antimicrobici negli allevamenti



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LA TECNOLOGIA CI DEVE VENIRE IN AIUTO

A NOI SERVE UNA TECNOLOGIA CHE POSSA AVERE APPLICAZIONE INDUSTRIALE

ESTRAZIONE CON FLUIDI SUPERCRITICI (SFE)

Attività di ricerca

Ricerca Sanitaria Finalizzata

GR-2013-02355796 - 13F01



OCIMUM BASILICUM



CO_2 supercritica

Oli essenziali di basilico

Antibiotici zootecnia intensiva

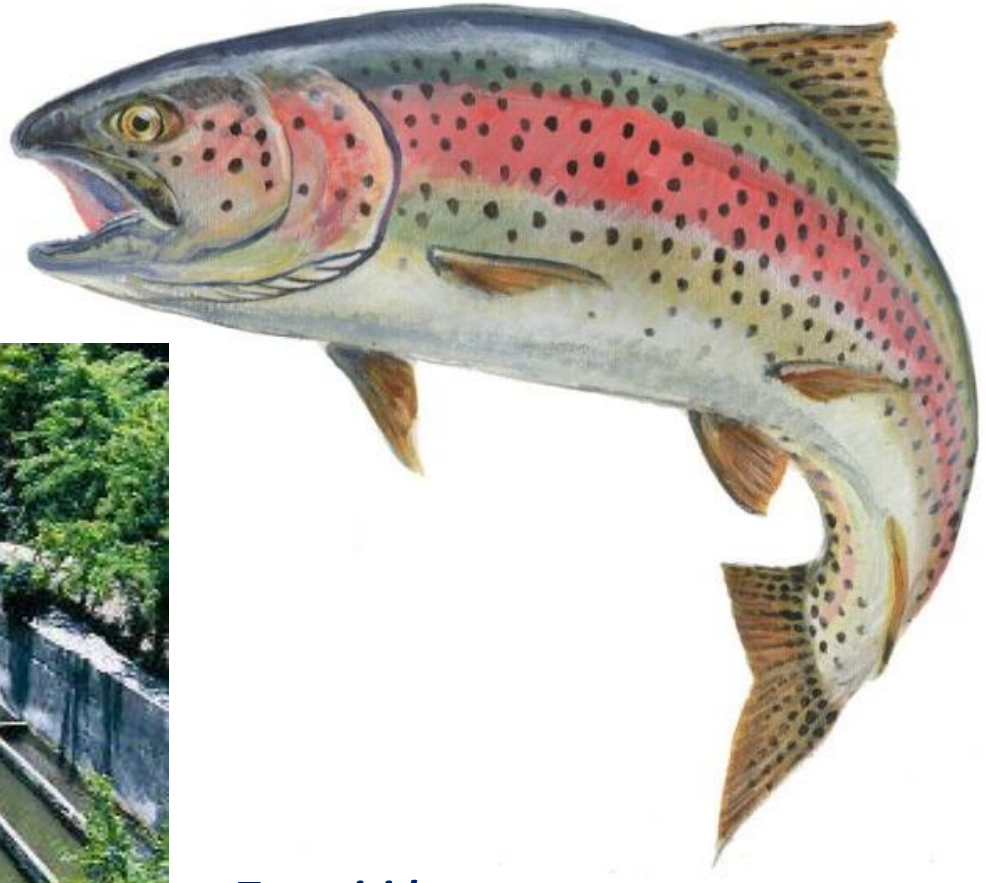
Acquacoltura

CRAB
Centro di Referenza Nazionale per l'Antibioticoresistenza.

ISTITUTO ZOOPROFILATTICO SPERIMENTALE
del Piemonte Liguria e Valle d'Aosta
J. Altara

LATTOCOCCOSI NELLA TROTA IRIDEA (Lactococcus garvieae)





Trota iridea (Oncorhynchus mykiss) Piemonte è uno dei maggiori produttori

Estrazione con Fluidi Supercritici



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E' POSSIBILE ALLEVARE SENZA USO DI ANTIBIOTICI

Take-home messages

Allevare polli senza antibiotici si può. Il caso del Campese Amadori e di realtà come Fileni, Guidi, Coop e ValVerde che puntano su qualità e benessere

Paola Emila Cicerone 30 marzo 2017 Etichette & Prodotti Commenti
3,177 Visto

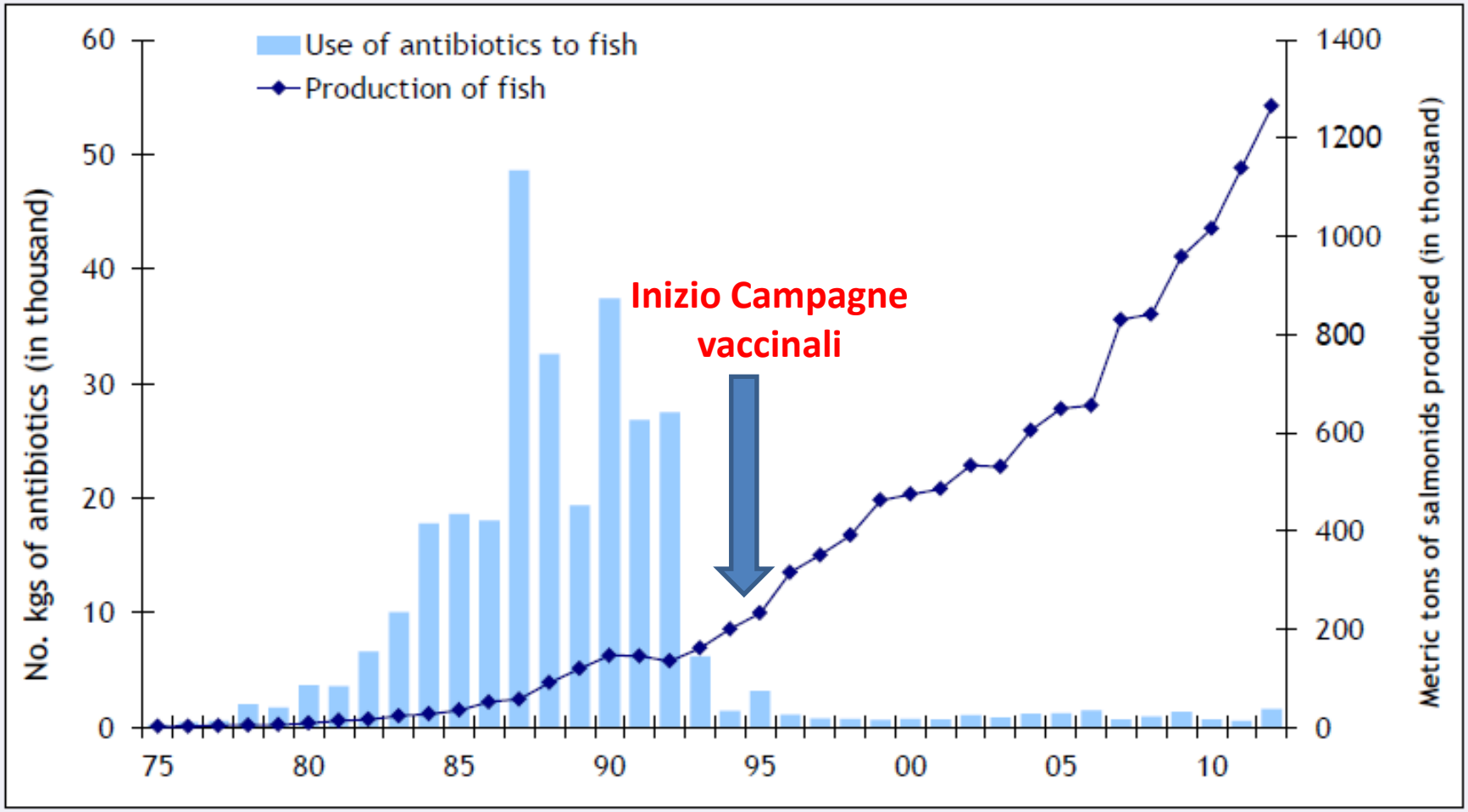


L'azienda agricola Guidi di Roncofreddo è stata la prima a proporre un pollo senza antibiotici





USE OF ANTIBIOTICS IN NORWEGIAN AQUACULTURE 1975 - 2012



Take-home messages

Veterinærinstituttet

Ed il prezzo dei prodotti??



Take-home messages

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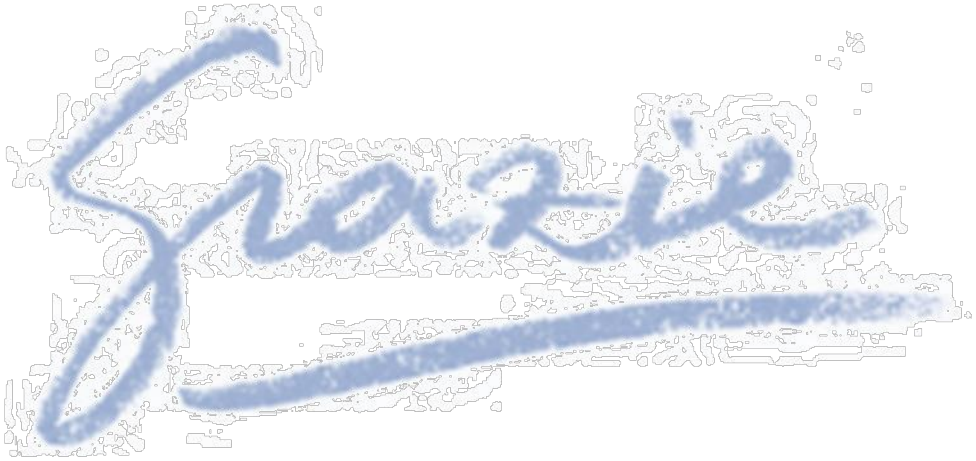
Meno possibile, solo quanto necessario



Più li usiamo...meno li conserviamo