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**EDITORIAL: RATIONALE FOR ETHICS AND  
SUSTAINABILITY IN AGRICULTURE  
AND FOOD**

**1. INTRODUCTION: NEW BOOKS WRITTEN  
BY SCIENTISTS ON ETHICS**

Ten recent books address ethics in agriculture, food and the environment. A decade ago few books could be found on this theme. Back then the occasional publication on ethics in agriculture and food was typically written by an academic philosopher. Now it is different. Not only are there more books dealing with this topic but most are written by scientists, social scientists and economists actively working in the food chain. Sprinklings of academic philosophers are found among the authors of the books reviewed here but even they are located in faculties of agriculture and biology where they work alongside scientists. The authors of

these books write for their fellow professionals, for the policy makers of the institutions in the food system and for Western governments.

The authors come from widely varied professional disciplines. They do not write in the abstract. Each book is loaded with the hard data of their research findings in their specialist fields. Yet, together they speak to a common theme; interpretations of their research portray trouble in the food system. Having carefully presented their findings and analyses as professionals in their fields, they depart from normal practice. They do not only recommend different technologies or alternative resources or even more research. They unite, unconsciously in common cause without collusion, in calling for ethical solutions to the problems they see looming for the food system if the present paradigm continues.

### Why do specialists talk about Ethics?

This Editorial asks why so many individuals working in agriculture and food now give time and effort to write about the need for ethical behaviour and why they document and build their case upon the specific parts of the food supply system with which they are so familiar and competent? These authors do not aim to promote discussion in academia—though some of the books are undoubtedly suited for teaching. The writers document where things have gone wrong, analyse the reasons and advocate changes. Their message is for policy-makers, for decision-makers, for business leaders and for scientists.

Why has the issue of ethics grown in prominence during the last decade? Perhaps even more important why has a shift taken place, shown in these new books, from the moral philosophy ethics of the academy to the real world situations of farming, the natural resources, food processing, health, safety, business, politics, the citizenry and consumers? Ethics is concerned with human moral behaviour. In every area of human activity an individual, an institution, a business or a government can choose to behave ethically or unethically. Policies, business plans and corporate visions can be ethical or unethical. But society always holds individuals responsible for acts of implementation. Thus chief executives are held accountable for unethical financial behaviour and individuals in the military or the police are held responsible for personal acts of violence against prisoners even though such behaviour may be encouraged by institutional policy or even mandated.

Here in this Editorial we dig deeper to discern the fundamental reason provoking so many to write thus; we try to identify those evident common fears among them; and we listen to their analyses of what they think is wrong. What is the common danger that the authors identify and fear? Although each book offers some specialist comments within their field, the authors do not see solutions generally coming from the technological realm. Evidently they identify a systemic problem in the food chain and consider that ethical behaviour by all parties must be a major part of the solution. We try in this Editorial to do two things: to identify the common systemic problem; and to understand why the authors choose ethics as the best solution.

### The Editorial follows this sequence:

1. Introduction: New books on Ethics;
2. Titles of the ten new books;
3. Main topics in the books;
4. Overview of the books to ascertain reasons for authors' disquiet;
5. What is the rationale behind the authors' advocacy of Ethics?
6. The special challenge to scientists for ethical behaviour;
7. Speech by Michael Meacher, Former UK Minister of the Environment on "Which science or scientists can you trust?";
8. Reviews of the ten books on ethics by scientists.

### 2. TITLES OF THE TEN NEW BOOKS

**Agri-Culture: Reconnecting people, land and nature. (2002). Jules Pretty.** Earthscan Publications, London and Sterling, Virginia, USA. ISBN 1-85383-925-6. 261pp.SB. £14.95. Professor Jules Pretty is Professor of Environment and Society at the University of Essex, UK.

**Food Wars: The global battle for mouths, minds and markets. (2004). T. Lang and M. Heasman.** Earthscan Publications, London and Sterling, Virginia, USA. ISBN 1-85383-702-4. SB. 365pp. £19.99. Professor Tim Lang is Professor of Food Policy, City University, London, UK. Dr. Michael Heasman from Finland is Visiting Research Fellow, City University, London, UK.

**Life Science Ethics (2002). G.L.Comstock (Ed.), L-M Russow, H. LaFollette, L. May, G. Varner, P.B.Thompson, F. Gifford. C, Taliaferro, and others who wrote case studies.** Iowa State Press, a Blackwell Publishing Company. ISBN 0-8138-2835. HB. 380pp. £45. Dr. Gary Comstock is Co-ordinator of the Iowa State University Bioethics Program and Professor of Philosophy and Religious Studies and a faculty member of the College of Agriculture.

**Just Knowledge? Governing research on food and farming. (2004).** Published by Food Ethics Council, 39-41 Surrey Street, Brighton BN1 3PB, UK. SB. 68pp. £10. Executive Director of the UK Food Ethics Council is Dr. Tom MacMillan.

**Seeds of Deception: Exposing corporate and government lies about the safety of genetically engi-**

**neered food. (2004). Jeffrey M. Smith.** Originally published in the USA by Yes! Books, PO Box 469, Fairfield, Iowa 52556. Published in UK by Green Books, Foxhole, Dartington, Totnes, Devon TQ9 6EB. ISBN 1-903998-41-7. SB. 254pp. £9.95. G.M.Smith is the Founder and Director of the Institute for Responsible Technology.

**The Pesticide Detox: Towards a more sustainable agriculture. (2005). Jules Pretty (Ed) plus 28 specialist authors.** Earthscan Publications, London and Sterling, Virginia, USA. ISBN 1-84407-142-1. SB. 294pp. £14.95. Professor Jules Pretty is Professor of Environment and Society at the University of Essex, UK.

**Ethics in Food and Agriculture: 1st Session of Panel of Eminent Experts. (2001).** FAO. Viale delle Terme di Caracalla, 00100, Rome, Italy. ISBN 92-5-104558-5. SB 26pp.

**Ethics in Food and Agriculture: 2nd Session of Panel of Eminent Experts. (2003).** FAO. Viale delle Terme di Caracalla, 00100, Rome, Italy. ISBN 92-5-104896-7. SB 26pp.

**Food Safety: Science and Ethics. Report of the FAO Expert Consultation. (2004).** No.1 in FAO Ethics Series. FAO. Viale delle Terme di Caracalla, 00100, Rome, Italy. ISBN 92-5-105070-8. SB 41pp.

**Ethics of Sustainable Agricultural Intensification. (2004).** No. 3 in FAO Ethics Series. FAO. Viale delle Terme di Caracalla, 00100, Rome, Italy. ISBN 92-5-105067-8. SB 26pp.

### 3. MAIN TOPICS COVERED BY THE AUTHORS LEADING TO A COMMON CONCERN FOR ETHICAL BEHAVIOUR

- Ethics in the context of specific subjects including food, animals, environment, land, biotechnology, genetically modified food, farms, pesticides, supermarkets, trade, patents;
- Decision-making procedures affecting public interest including manner of discourse, stake-holders interests, transparency, stewardship, risk assessment and the precautionary principle;
- Disquiet over decisions already made on issues in the public realm which the authors consider to be unethical plus their evaluations of the good and bad consequences for different stake-holders.
- Philosophical, religious, social and legal reasoning that underlies morality;

- Case studies which dissect individual problems;
- Techniques of ethical analysis;
- The aims and process of teaching ethics to undergraduate students;
- Exercises for students.

### 4. WHAT CAUSES THE AUTHORS' DISQUIET?

These new publications identify particular targets where the authors who work as specialists in the food chain state their deep concern that all is not well. Of course, one may counter that it is rare for all to be well in the world. But that is not the issue. These books do not seek a utopian society. The authors are not advocating new political or economic ideologies. They are not revolutionaries. Most of them might well be classified as pillars of the establishment. But they write as concerned thinkers whose professional training is combined with their role as citizens. They want something different to characterize the food chain. What, in a word, are these authors concerned about? To simply answer “Ethics” leaves the matter opaque to many people. Ethics simply describes behaviour. So, we have to ask what is the foundation issue provoking these active, thoughtful professionals to advocate morally good decisions and actions? Reading the books leads one to conclude that the crux of their shared vision is **sustainability of the food chain**.

#### Sustainability of the food chain

What is sustainability of the food chain? The word sustainability has been too often and too narrowly linked only with the conservation of natural resources and the environment. True, it was in this context that the word “sustainable” entered the vocabulary of those seeking both to use and to conserve the land and natural bio-resources. Sustainability is a new word for the old philosophy and practice of “good husbandry”. The word “husbandry” is not welcome or even understood today following the radical changes in gender stereotypes since the 1960s. The United Nations Conference on the Environment in Stockholm in 1972 launched the relatively new word “sustainable” into common parlance and indeed it quickly became a buzz word used liberally in project proposals and bureaucratic documents—often realistically and some-

times simply to gain acceptability in the new paradigm of natural resource use and conservation.

The authors of these books writing on the need for ethics are worried about the lack of sustainability as changes now occur continuously throughout the length and breadth of the food system. They fear that the rapid changes being constantly driven in a duet by science and business will eventually destroy the existing food system which they see as fundamentally good. The documented history of Western agriculture over recent centuries provides a record of economic success combined with sustainability. The West created a food system that replaced subsistence and serfdom, with farming units often based upon families that resided locally, were part of a congenial rural life and marketed their produce close-by. This does not imply that the authors have an unrealistic idyllic picture of the past. Life was not all positive and good in the farming communities of those days. Over the centuries there was a pattern of ongoing change but most of these improvements enhanced life without jeopardizing the future of the overall agriculture and food system as is happening today. During the 19th and 20th centuries mechanization took away much of the back-breaking labour traditionally associated with working the land. Quality of life was enriched when electricity, piped water, sanitation and other amenities were brought to rural areas and isolation was removed by public transport, telephone, car and the media. Cottage industries were replaced by local processing facilities often organized as farmers' co-operatives. Governments were main actors in encouraging and in financially supporting these changes in farming because they brought greater good to both rural and urban populations.

Today it is different. The authors writing from many professional perspectives share a common anxiety for the sustainability of the system as changes are brought about by a constant flow of innovative scientific knowledge funded or driven by large-scale corporations and supermarkets. Western governments have withdrawn their historic policy of supporting viable economic agricultural communities. Instead Governments support policies to generate more financial turnover and growth in profits under the dominating umbrella of competition that especially benefits the larger-scale enterprises. In fact, the authors see that Western governments have abandoned their traditional

mandate to improve the quality of life and are allowing economic pressures to drive farmers off the land while also offering encouragement to the powerful duo of science and the private sector to shape the food chain. Authors regret that this scenario results in more intensive practices such as pesticides whose negative effects they document. Authors also regret the increasing use of legal means to enforce compliance to the economic interests of the large-scale operators in the food system. They cite particularly the hard-nosed contracts by supermarkets forcing farmers into more unsustainable methods and the legal power of patents used with genetically modified seed and food products against which individual farmers and consumers are left with little defence. Because of the power of a few large corporations in the food system, the principles of the market-driven economy are being massaged so that farmers always face a ruthless buyers' market and consumers increasingly lose their ability to drive the market. Consequently the authors, writing from different angles, have a common concern about abuse of the system that formerly was sustainable, supplied sufficient food and allowed market signals to pass freely between consumers and farmers.

### **Fear of lost sustainability**

The authors' alarm is not simply over the sustainability of the land, water, forests, domesticated and natural flora and fauna though these are vital. They are apprehensive over the survival of the agriculture and food system itself. Sustainability is at risk in terms of economics, social development, health and safety, animal welfare and feeding the poor of the world. Authors also have deep concerns about the legal structures being put into place which drive the system ever more into the hands of a small group of business decision-makers. Self-interest on the part of business is accepted by society provided it remains within limits. The books are concerned about those limits as there is now a very small number of huge businesses which dominate the segment of the food chain between farmers and consumers. The authors call for the limits to be defined voluntarily by ethical behaviour rather than by regulatory means. A further anxiety is the trend towards vertical integration of power by which some wholesale, processing and retail giants hold power over farmers and consumers to an extent which is unethical.

For example, it is unethical when a small group of decision-makers representing only a minority of stakeholders make decisions and control events which pressure other participants throughout the whole system. The current crop of books faces this ethical problem from a variety of perspectives but underlying them all is fear of lost sustainability and ultimate collapse of the food system. The combined scenario which authors portray is of a system being pushed so far, so remorselessly, so blindly, that it will not survive in viable form.

### **Dilemma of concerned professionals**

The difficulty facing the authors and other citizens who foresee the danger of the system disintegrating is that they approve the democratic and economic principles upon which the existing system operates. The socio-economic system of market economy capitalism is recognized as the best available—but it is not perfect and deep tremors are shaking the longevity of the agriculture and food system.

The authors do not argue for revolution. They do not offer a new political ideology. They are not proposing central planning or communism which failed to feed people. They support market economy capitalism for the food chain. Their case is built upon the need to ensure the existing system is sustained. It already feeds the whole of the West with high quality, low-priced food. Why, they ask, press it to excess and make it unsustainable? Many people in the West today have the same intuitive perception that is captured by these books, that our wonderful system of food production is being stretched beyond repair.

The future of the food system now presents Western democracy and private enterprise with a huge new challenge. Concerned citizens, thinkers and professionals working in the food chain have limited options for change. A central fact is that these people do not want to replace the system. They think that, on the whole, it is admirable. That is why they are fearful when they see it heading towards self-destruction. They want to guard against that level of failure. It would be far easier for those seeking change to be utterly negative. Physical revolutionaries are expert at destroying socio-economic systems but usually find it more difficult to rebuild with their alternative model. Intellectual revolutionaries are often powerless to

bring about change without physical revolution. These authors are reasonable, intelligent, informed and worried men and women.

The challenge facing the West today is to moderate a successful system by retaining its good features while not allowing excessive freedom to destroy it. These books call for a sense of responsibility to accompany the privileges of freedom of choice offered by democracy and private enterprise so that the food chain system survives and continues to serve the community. Such an outcome could be enforced by regulation. But democrats are wary of enforcement. This is the scenario which motivates these authors, writing from within the system, to call for voluntary restraint in the interests of sustaining food supplies and the qualities of life in civilized communities.

### **5. RATIONALE BEHIND THE AUTHORS' ADVOCACY OF ETHICS**

Thinking, moderate, concerned people want to be constructive and not destructive; they want to conserve the highly successful Western food chain and not drive it into over-load; they are concerned about quality of life and not only about profit now. Several of the publications address the food supply in developing countries and point out that ethical behaviour is an essential foundation value in all activities and projects to change poverty by empowerment so that the poor can help themselves. The FAO publications also speak of the absolute necessity of ethics in the global moves to feed the 800,000 people in the world who are starving or suffering from malnutrition. The calls by FAO match the general position of all the authors in not seeking confrontation with the multi-national corporations and the supermarkets in the food chain-but rather calling for these bodies to accept their ethical responsibility by making decisions which support the community of life. They call for these privately owned institutions to be sensitive to the other participants holding the food system together. They want practices to cease which drive partners in the great food enterprise into survival mode. Many Western farmers are now desperately looking for ways to endure the unbearable with decreasing income. The authors call for all partners in agriculture and food to work together promoting connectedness and prosperity of the whole as advocated by the UK Policy Commission on the

Future of Farming and Agriculture in the Curry Report “Farming and Food: A Sustainable Future”. Leaders in each organization are urged to accept responsibility for the sustainability of the whole and to refrain from seeking in every decision to maximize personal gain.

### The Ethical Alternative

Ethics is not mere academic moral theory. Ethics is a matter of good behaviour—good being defined as actions which bring benefit to all those involved in food. Ethical behaviour is based upon the choice of individuals to act on the behalf of the community that is greater than themselves. Ethics is not altruism which is an act totally without any personal benefit. Ethical behaviour is not heroic and not necessarily self-sacrificing. Ethical behaviour is acting with an awareness of the interests of others. Ethical behaviour takes place within the normal routines of life: at work, in a profession, in family life etc. Everyone is capable of behaving ethically or unethically: Presidents and Prime Ministers, business executives, managers and workers in processing or in retailing and home-makers.

Typically there are two stages in making ethical decisions especially in situations undergoing change by introducing new knowledge, technology or products.

1. The first stage is to become aware of the options and of their likely impact upon stakeholders. The authors point out that this vital stage calls for “Due Ethical Process” to work through the impact of each option for good or ill upon others. Due ethical process means taking time to think through, explore, test and measure the consequences, evaluate the probabilities and assess the risks. The ethical process always involves consultation with others, especially stake-holders, in a shared spirit of integrity, transparency and honesty. The issues are sometimes complex. Several authors deplore the absence of due ethical process before changes are brought into the food chain.
2. The second stage is choosing the course of action taking account of the interests of all parties. This may involve compromises or even risks which should be exposed to public debate. Ethical decisions aim to bring benefit to all the affected parties. The essence of a good business contract is a win-win situation. Behaviour that ignores the

interests of others or manipulates others by superior power, knowledge or with legal compulsion often produces a win-lose situation. Win-lose situations may yield temporary benefits for one party but ultimately lead to loss for all parties and often shed negative effects upon the community as a whole.

Socrates, who died in 399 BC, defined ethics as this two stage process. He said: “Ethics is knowing the difference between good and evil and then choosing to do the good”. Two thousand years ago, Jesus quoted Moses (circa 1400 BC) with a succinct definition of ethical behaviour. Their statement aims to build sustainable communities and is based upon the assumption that positive community life is dependent upon ethical behaviour by everyone. Jesus said: “Do to others what you would like them to do to you; and do not treat others in ways that you would not like them to treat you”. Jesus astutely observed that this ethic even replaces the law.

Jesus’ statement is supported in essence by authentic leaders of mainstream religions who know that healthy and sustainable societies are created by the consensus of all members; and that without an ethical code of conduct accepted by all members the society will not last. This recognition that all have to work together to avoid collapse of civil society is not heard often these days in the West where there is a tendency to say: “The government should do something about the problem”.

The appearance of so many books advocating ethics in the agriculture and food system may be a function of post-Christian Europe where the assumptions underlying religious morality are no longer accepted in the public domain. Without invoking any religious connotation, the assumption underlying these books is nevertheless the same as the Jesus Way; that sustainability of positive community life is more desirable than maximizing economic returns and seeking unlimited material prosperity; and that ethical behaviour is not simply an academic specialty for philosophers but is essential in the market place.

### 6. CHALLENGE TO SCIENTISTS FOR ETHICAL BEHAVIOUR

The authors give special emphasis to ethical behaviour by scientists in the agriculture and food system.

There are several reasons for this. Scientists have traditionally not engaged in making personal profit. Society has regarded them as particularly objective and trustworthy since their work has customarily been away from economic pressures. In fact scientists were sometimes characterized as other-worldly in their single-minded pursuit of facts about the material world. In other words, society tended to see scientists as models of ethical behaviour—harnessing their education and gifts thoughtfully and positively in the service of the community.

Things have changed. Formerly scientists as a profession had a value system of integrity and service without a written code of conduct and without being formally taught. Young scientists learned from their mentors to avoid plagiarism, cheating in examinations, creating false data, massaging valid data, publishing bogus or selective results, failing to give credit when quoting others, and being prejudiced in refereeing papers for publication. All these ethical standards were taken for granted and, if they had not been learned as part of the general moral culture of Western society, they were virtues taught by the example of senior scientists and professors.

The recent introduction of required courses on ethics for undergraduate students in agriculture and food shows how things have changed reflecting the fact that virtue has changed in the West. Values used in public are increasingly subservient to economic success. Society has learned the hard way in the last decade that one can no longer expect all businessmen and women to behave ethically. A series of scandals, corruption and self-seeking by a few executives in some large corporations has shaken public confidence in the integrity of business. The time has long past when Western businessmen could conclude a business deal with a handshake. That is why, despite the excellent efforts of some business leaders to promote ethical policies and despite new ethics courses in business schools, commerce is increasingly subject to government regulations with sanctions against abuse of privilege. Legislating good behaviour is easier said than done. Laws against killing can be enforced but a law requiring people to love each other is impossible.

All the books assume or present evidence to show that scientific issues are frequently at the cutting edge

of ethical decision-making. Today, many scientists are in harness, in one way or another, to business interests in the food chain. The era has passed when scientists researched and published, leaving use to others. Agriculture and food companies employ many scientists. Food is big business, one of the biggest in the world. Scientists work hard and carry great responsibilities in expanding knowledge, designing new technologies and offering fresh options for dealing with intractable problems in agriculture, food and natural resources. This is applied science. The books challenge scientists in agriculture and food to extend their objectivity beyond the laboratory to application and use. Failure to follow traditional scientific objectivity, integrity and ethical behaviour brings disrepute on the scientific profession. The authors recognize the immense problems caused when scientists side with business in supporting the use of technology and marketing of products. There are huge pressures to abbreviate testing, support use with limited data, give assurances without appropriate knowledge, fail to disclose, hide contrary results in privacy laws and even deny negative side-effects.

Society has recently discovered that scientists are normal people with all the temptations, given the opportunity, to make decision in self-interest. The deeper question is whether scientists themselves have yet accepted this fact. The authors of the ten books, most of whom are scientists, see their fellow scientists as one of the main readership targets. In seeking sustainability in the food system, the authors emphasize the importance of scientists remaining true to their professional objectivity and by bringing ethics into decisions about using new science in the food system.

In the 21st century the scientific mind-set of reductionism views everyone as a specialist. With this stance it is natural for some scientists to think only within their own subject and to ask why they should be involved with ethical aspects of their work. Why, they ask, cannot ethics also be left to the specialist moral philosophers and to those who have been specifically trained to think about morality? The authors refute the view that ethics is simply another reductionist discipline. The writers call for ethics to be a central part of the decision-making process for all involved in use of natural resources.

### Due Process for Ethics

In civilized society the possible uses of scientific innovation should be discussed rationally, comprehensively and publicly with objective analysis of benefits, known hazards and uncertain risks affecting present and future stakeholders. The alternative of emotive arguments, lack of transparency, limited participation and secrecy result, sooner or later, in public confrontation. Due process that limits participation by the community is unethical and is likely to result in unjust suffering by some of the stakeholders. Scientists have a major responsibility in this process. The authors of these books appear to have doubts whether society is being well-served by scientists in due process of ethics.

### Rationale for Ethics in Agriculture and Food

In conclusion we return to the original questions. In their advocacy and search for sustainability why do the authors of these books give special emphasis to ethics? In the context of agriculture and food, individuals and leaders of institutions may be motivated in three different ways: economics, legal sanctions or ethics. The economic motivation underlies many of the problems which the authors fear are harming the food system. Legislation is not popular in democracies as a means of proscribing actions which are not obvious criminal violations of accepted morality. Hence the appeal to ethics—to the sense of responsibility for building the community of life.

In the absence of responsible ethical behaviour in the food chain, more legal sanctions will be needed to preserve the food system. It then becomes a matter of difficult judgment for governments and their advisers to decide when, what and how to legislate. Doubtless the authors hope that leaders in the food system can be persuaded to behave more ethically since the legal route is rarely successful in such a complex system as the food chain. And there is always the problem that some people think that laws are meant to be evaded or even broken. Ethical behaviour is the preferred route to sustainability.

### Science, scientist and trust

The ethics of scientists was the topic of an address “Which science or scientists can you trust?” by

Michael Meacher who was the UK Minister of the Environment in the Cabinet of Tony Blair from May 1997 to June 2003. His edited version is reproduced below with acknowledgement. Following his paper are brief reviews of each book Included in this Editorial.

*John Hodges*  
Editor, EAAP News

### WHICH SCIENCE OR SCIENTISTS CAN YOU TRUST?

**Michael Meacher, M.P.**

*For six years while he was UK Minister of the Environment Michael Meacher led the UK Government policy on GM crops among other duties. The theme of his address is that we need independent science and scientists who take the precautionary principle seriously; further that sweeping changes are needed in science funding and scientific advice to the government that ensures the protection of independent science.*

*This is an edited version of Michael Meacher's keynote address to the Green Network Conference, Science, Medicine and the Law, 31 January to 2 February 2005, Royal Institute of British Architecture, London, UK, issued as a press release, which will be published in issue 26 of Science in Society ([www.i-sis.org.uk](http://www.i-sis.org.uk)).*

Nobody disagrees that debate over whether we should go ahead with new technologies should be conducted on the basis of science, but which science? Independent science or industrial science? Let me test out a few examples on you.

Fifteen years ago a lorry driver accidentally tipped 20 tonnes of aluminium sulphate into the public drinking supply in north Cornwall—nearby residents and local doctors are convinced they were poisoned; but two Government enquiries found no evidence. Whom do you believe?

There are childhood leukaemia clusters in villages down the Cumbrian coast—local residents and independent scientists think it is the consequence of chronic exposure to low-level radiation from nearby Sellafield; but the Department of Industry (DTI) and British Nuclear Fuels (BNFL) think it is nothing to do with local nuclear power stations—their best explanation is

that it is caused by high levels of inward and outward migration. Whom do you believe?

Mark Purdey, a Somerset farmer turned epidemiologist, has produced detailed evidence to show that BSE was caused by farmers spreading Phosmetz, an organophosphate (OP), over the backs of cattle as a prophylaxis, but the Government's MRC Toxicology Unit—funded by the pharmaceutical company Zeneca—apparently refuted this theory. Which company held all rights over the production of Phosmetz? Zeneca. Whom do you believe?

Gulf War Syndrome has been a persistent disabling, and sometimes lethal, condition since the first war in Kuwait in 1991. Both UK and US soldiers and their independent scientific advisers are convinced that the soldiers were poisoned by the OP insecticides that they were liberally sprayed with. But the Ministry of Defence (MOD) and chemical companies insist there is no evidence for this. Whom do you believe?

Well, if you have any doubts, look at what has actually happened in the past when Government, in the teeth of overwhelming evidence, have often finally been forced to back track from entrenched positions that they always said were supported scientifically.

### **Science can quite often get things wrong. Which science?**

Government biologists initially refused to accept that power stations in Britain or Germany could kill fish or trees hundreds of miles away in Scandinavia; later the idea of acidification caused by SO<sub>2</sub> was universally accepted.

Government scientists originally did not agree that chlorofluorocarbons (CFCs) were destroying the ozone layer; but during the 1987 negotiations on the Montreal Protocol the industry ICI and DuPont, abruptly changed sides, and ministers and scientists soon fell into line alongside them.

The Lawther working party of Government scientists roundly rejected any idea that health-damaging high levels of lead in the blood came overwhelmingly from vehicle exhausts, only to find that after lead-free petrol was introduced, blood-lead levels fell 70%.

The Southwood committee of BSE scientists insisted in 1990 that scrapie in cattle could not cross the species barrier, only to find by 1996 that it did just that. And there are many more examples.

### **Scientific uncertainty and the precautionary principle**

The only way to deal with these problems is by applying the precautionary principle. Perhaps the classic formulation of the precautionary principle was at the Rio Summit in 1992 principle 15: “in order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.” That principle survived renegotiation attempts during the Johannesburg Summit in September 2002, and was reaffirmed in the Plan of Implementation that resulted from the Summit.

Why has this not been adopted by scientists and policy-makers? There can be only one reason: cynicism of not disturbing powerful political and economic interests.

It is highly disturbing to realise how long it takes for poisonous chemicals to be banned after scientific evidence emerged that they were harmful.

Benzene was demonstrated as powerful bone marrow poison in 1897.

Acute respiratory effects of asbestos was identified 1898.

The ability of PCB to induce chlor-acne was documented in 1898.

But it was not until 1960–70s that significant progress was made in restricting damages caused by these agents.

### **Independent scientists vilified**

Efforts were made to discredit independent critics, as in the case of Richard Lacey and Mark Purdey in BSE, and Arpad Pusztai in GM food, and too many other examples. Data and reports have been regularly suppressed or publishers intimidated, as in the Great Lakes chemical case. The Southwood Committee on BSE believed a ban on the use of all cattle brains in human food chain might be justified, but considered that politically unfeasible. There was also incompetence: the Department of Health was not informed by MAFF (the then Ministry of Agriculture, Fisheries and Food, now disbanded) about the emergence of

new disease (BSE) until 17 months after MAFF was first alerted.

### **Pervasive mistrust of science and scientists**

No wonder that there is a pervasive mistrust of science and scientists. But the roots for this go deep.

First, the Rothschild revolution under Thatcher made the funding of science much more subservient to business interests. Over the past two decades, getting finance for scientific inquiry inimical to the commercial and political establishments has become increasingly difficult. The science is owned by a tiny number of very large companies and they only commission research which they believe will further their own commercial interests. And when that turns out not to be the case, as when research turns up results which may be embarrassing to the company, they are most often dubbed “commercially confidential” and never published.

In addition, companies have learned that small investments in endowing chairs, sponsoring research programmes or hiring professors for out-of-hours projects can produce disproportionate payoffs in generating reports, articles, reviews and books, which may not be in the public interest, but certainly benefit corporate bottom lines. The effects of corporate generosity – donating millions for this research laboratory or that scientific programme – can be subtly corrosive. Other universities regard the donor as a potential source of funds and try to ensure nothing is said which might jeopardise big new cash possibilities. And academics raising embarrassing questions (as they should) – such as who is paying for the lab; how independent is the peer review; who profits from the research; is the university’s integrity compromised? – would soon learn that keeping their heads down is the best way not to risk their career, let alone future research funding. The message is clear: making money is good, and dissent is stifled. Commerce and the truth don’t readily mix.

A second reason why there is such pervasive mistrust of science and scientists is that the scientists staffing the official advisory committees and Government regulatory bodies in a significant number of cases have financial links with the industry they are supposed to be independently advising on and regulating. A recent study found that of the five

scientific committees advising ministers on food and safety, 40% of committee members had links with the biotechnology industry, and at least 20% were linked to one of the Big Three—Monsanto, Astra Zeneca, or Novartis. Nor is that an accident. The civil servants who select scientists for those bodies tend to look for a preponderant part of the membership, and particularly the chairperson, to be ‘sound’, i.e., can be safely relied on not to cause embarrassment to the Government or industry if difficulties arise.

Third, the culture of spin and intimidation is far more pervasive than should ever be allowed. The shocking sacking and vilification of Dr Arpad Pusztai, when he produced GM research results inconvenient to the Government, bio-tech industry and the Americans, was no doubt, deliberately intended as a warning to others if they stepped out of line. And the threats and insinuations made clear to the only two independent scientists on the UK Government’s GM Science Panel, Dr Carlo Leifert and Andrew Sterling, demonstrates all too clearly how viciously the Establishment will fight to safeguard its own interests.

And on spin, how many times have we heard the false argument that is still regularly deployed by ACRE, the Government’s main GM advisory committee, when it announces that, “there is no evidence that this GM product is any greater risk to human health than its non-GM counterpart”. In fact they have not sought such evidence directly, merely relied on the biotech companies telling them that their GM product was ‘substantially equivalent’ to its alleged non-GM analogue.

Fourth, science is not, and never has been, a value-free search for the truth. It is a social construct influenced by a variety of rules, peer group pressures, and personal and cultural expectations. It is developed, like all human thought, from preconceived built-in judgements, assumptions and dogmas, the more powerful because they are often unconsciously held.

### **So what is to be done?**

What all this means is that science can only be fully trusted if it is pursued with the most rigorous procedures that guarantee total independence and freedom from commercial and political bias. That is far too often not the case today. The implications for policy are clear.

1. If the Government truly wants independent research, it has to be prepared to pay for it, not lay down, as it has, that 25% of finance for publicly funded research should come from private sources, thus forcing the universities into the hands of corporate sponsors.
2. The Government should also require that no member of its advisory committee or regulatory bodies should have any current or recently past financial or commercial link with the industry concerned.
3. Contributors to scientific journals should be required to make full disclosure of current and prior funding sources, so that any conflicts of interest can be exposed and taken into account.
4. We need above all a Government with the political gumption to stand up to the United States and those demanding calls from the White House, to stand up to the biotech companies, and to stand up to big business, and make clear that there will be no succumbing to dominant political/economic interests, e.g. no growing of GM crops in this country until proper, systematic, independent, peer-reviewed research, which is totally absent at present, has been carried through and made public which demonstrates beyond any reasonable doubt whether GM foods are safe or not.

We should never forget the words of Winston Churchill, who said “Science should be on tap, not on top”.

**TEN BOOKS ON ETHICS IN  
AGRICULTURE AND FOOD  
CITED IN THE EDITORIAL ABOVE  
Reviewed by the Editor**

**Agri-Culture: Reconnecting people, land and nature. (2002). Jules Pretty. Earthscan Publications, London and Sterling, Virginia, USA. ISBN 1-85383-925-6. 261pp.SB. £14.95. Professor Jules Pretty is Professor of Environment and Society at the University of Essex, UK**

This scientific book is a work of art. The author writes precisely about the natural resources used in agriculture and weaves them realistically into different socio-economic contexts with understanding of

the whole which he sees as a rich and beautiful component of life experience. But this is not romance with the countryside. The book provides a hard hitting, factual, documented argument about the way in which the natural resources have enabled Western society to rise from simpler survival to the present state of luxurious and plentiful food supply. Then the author tackles the issues of today: the current agricultural food revolution which still leaves hundreds of millions suffering from hunger and hundreds of millions over-eating the wrong sorts of foods. The author expresses a deeply felt horror that, with all our technical prowess and scientific competence, we fail to integrate use with sustainability. We have practised agriculture for 12,000 years mainly with long periods of stability and occasional short bursts of rapid change. The author believes we are now at a critical juncture. He advocates harnessing the best of nature with local human knowledge in a partnership of agroecology. He cites examples of sustainable transformation which have been seen in many parts of the world. The author proceeds methodically through the darker side of the present trends which exclude people from their heritage and create monoscapes. One chapter is devoted to the economic distortions with negative side effects which demand payment from society in other ways. The author was one of the first to document elsewhere the real costs of food. He argues persuasively for poverty elimination. A central theme is the need for connectivity throughout the food chain and he also throws penetrating thoughts on the ethical balance needed in the controversy on biotechnology and genetic modification. The final chapter cites cases and individuals who have made a difference by changing the way they think and act—ethical behaviour in fact. The author writes knowledgeably and convincingly. He calls for action—thoughtful action based upon ethical policies to change the present course of agriculture and food. He considers this urgent. This book is about humanity: its past life on the soil; the present distortions introduced by humanity leading to unsustainable practices which still fail to feed the world; and the fear he has for the future. But he is not a doomsday writer. He calls for sense to prevail and for ethical behaviour to be embraced—before it is too late.

**Food Wars: The global battle for mouths, minds and markets. (2004). T. Lang and M. Heasman. Earthscan Publications, London and Sterling, Virginia, USA. ISBN 1-85383-702-4. SB. 365pp. £19.99. Professor Tim Lang is Professor of Food Policy, City University, London, UK. Dr. Michael Heasman from Finland is Visiting Research Fellow, City University, London, UK**

This is a heavyweight but frightening book. Frightening because of the careful and massive documentation built up by the authors about the food chain. Each of the chapters of the book is thoroughly researched so the reader is not given opinions, but facts and interpretations. On this basis the authors examine the changing paradigms of how the West is supplied with food including problems on the farm and in ecology. They look at the implications for nutrition, diet, health, obesity, food borne disease, poverty and food security and relate these to government policies in Europe and the USA. Their study of the retail sector is impressive covering the emergence of the modern food company clusters, the scope of food processors, power of supermarkets, global and local aspects, GM and organic foods. A key chapter is their research and analysis of the war to control the consumer market, advertising, shopping, spending and the way the issues of health and safety have been exploited. The authors provide over-whelming documentation of the current practices of supermarkets in their determination to sell ever larger quantities of lower and lower priced food and to gain the whole food market. They present facts and figures that have not been collected and assembled before—especially about the retail scenario. The authors have presented seminars on the issues in many countries over the last ten years as their theme has been researched. Their research is mainly in the West but they express fears about the consequences of the Western food system spreading into the eating styles and diets into the rest of the world. The supermarket companies do not emerge with an ethical halo. The authors view the impact of the new dynamic of retailing upon land, water, pollution, waste, climate, urban and rural populations, energy etc. The concentration of power over the food chain by so few decision-makers is frightening. The authors raise the deep questions of public

interest and whether there is any possibility of stopping the juggernaut apart from government intervention. The food chain, as they see it, is in deep need of new ethical leadership. The accelerating trends point unmistakably to a food system that is not sustainable. The authors offer four scenarios for the future: to do nothing and allow so-called market forces to run their course; to look for corporate solutions; to frame market conditions; and to empower civil society to demand and to consume differently. The authors say they remain optimistic, but the facts they present on the food war leaves one wondering how a food peace can be achieved.

**Life Science Ethics (2002). G.L. Comstock (Ed.), L.-M. Russow, H. LaFollette, L. May, G. Varner, P.B. Thompson, F. Gifford. C. Taliaferro, and others who wrote case studies. Iowa State Press, a Blackwell Publishing Company. ISBN 0-8138-2835. HB. 380pp. £45. Dr. Gary Comstock is Co-ordinator of the Iowa State University Bioethics Program and Professor of Philosophy and Religious Studies and a faculty member of the College of Agriculture**

Although more than 50 authors have contributed to this book it is extremely well integrated, laid out systematically and follows a format well suited for teaching ethics to agriculture and biology students and faculty. The authors have solid credentials in philosophy which are linked with their understanding of biology, agriculture, food and the environment. A programme to teach faculty members in US Colleges of Agriculture and Food was an initiative under the leadership of the Editor, Dr. Comstock, at Iowa State University who founded the “Iowa State University Model Bioethics Institute” which has been replicated on five other US campuses. More than 500 faculty members, many from agricultural faculties in US universities have taken the residential course—an indication of the recent arrival of bioethics in agriculture and food. Some of the case study material was developed at these Institute courses by participating faculty. The book has three parts. The first part with four chapters covers Ethical Reasoning. The basics of foundational ethics are covered in four chapters including origins of moral values, alternative value systems, assumptions, religion, reasoning and

methodologies. It is not heavy and may perhaps be criticized only for its brevity but not for sound content. The second part provides six chapters on Life Science Ethics covering the environment, food, animals land, biotechnology and farms. The chapters provide ethical analyses of real issues in the food chain. They are clear, not dogmatic and open the reader to the complex of issues and parties which must be considered before ethical decisions can be made. The third part provides 12 case studies: beef, milk and eggs, veterinary euthanasia, hybrid corn, biotechnology, trait protection system, golden rice, organ transplantation, rare plants, marine mammal protection, infant deaths in developing countries, edible antibiotics in food crops, etc. Exercises are given in the appendices plus notes for instructors. Much thought and experience of teaching ethics is gathered concisely here. The book is clearly written and edited; has obvious value as a text book; covers a wide swath of real problems, opens options, and emphasizes the need for parties to work together and find creative ways of making decisions which embrace the common good while also avoiding negative consequences for any of the stakeholders including the environment. This requires a non-negotiable commitment to ethical behaviour and not simply to the concepts of ethics. The book is commended as a tested introductory text on ethics in the life sciences with many references to agriculture and food.

**Just Knowledge? Governing research on food and farming. (2004). Published by Food Ethics Council, 39-41 Surrey Street, Brighton BN1 3PB, UK. SB. 68pp. £10. Executive Director of the UK Food Ethics Council is Dr. Tom MacMillan**

This publication is the latest in the excellent series by the UK Food Ethics Council. The theme is a call for a just research system for food arguing for a greater and earlier public engagement in science to meet public trust. The starting point is the shaken confidence in science resulting from the series of controversies about risk regulation, new technology and public health against a backdrop in the UK of Mad Cow Disease (BSE), Foot and Mouth Disease, Genetically Modified Crops and Obesity. A UK government committee reported in 2000 that there is a crisis of confidence in the governance of science and technol-

ogy. They concluded that citizens are still enthusiastic for science but are sceptical whether it is governed in the public interest. One response to this criticism was the government sponsored national debate “GM Nation?” which was intended to enable non-scientists to deliberate on science. However, the authors comment that the debate was deeply divided and did little to resolve the confidence in the governance of science. They consider the debate was too late in the events of GM food leaving participants with only one question—did they want this technology or not? The authors consider that public involvement has to take place at an earlier stage during research and development to avoid organizations such as the Royal Society (the prestigious UK scientific academy) and Greenpeace being at loggerheads. That confrontation revealed that the lack of confidence in the governance of science is not merely about facilitating earlier consultation on the technology and possibilities of science but also on public scrutiny of the assumptions, values and visions that drive science. With this background, the new publication does a superb job of examining the critical issues in penetrating detail. The main recommendations are now summarized. Ethics in research is essential and ethics should be introduced and taught at an early stage in science education. The question of how to govern technology leads to a recommendation that the UK government should press in international trade negotiations for amendments to any clauses that are perceived to rule ethical or social considerations out of regulatory assessment for new products. The current UK participatory assessment of science is seen as poor compared with other European countries. Stakeholders should be involved not only in the government’s own science procurement and funding processes, but should be integrated into the flagship policy initiatives to support business research and development. On sustainable development, an excellent chapter, the authors recommend the government to promote a more joined-up approach to research and innovation to ensure sustainability is involved from the early stages of all research and technology development. Further the government departments responsible for the issues relating to sustainability should be financially independent from industry. Finally, four additional criteria must be included in the governance of science and technology: Consistency—to avoid dou-

ble standards; Sustainability; Accountability—making policy advice transparent and independent; and Fairness—leading to justice in the distribution of research resources. Anyone, scientists or citizen, interested in gaining a better understanding of how science and technology could be better governed in the public interest will find this publication of only 67 pages a very readable, perceptive, penetrating and clear account of the present failings and how they should be changed. The authors submitted their report in draft to an eminent panel whose support is given in an appendix. The reports of the Food Ethics Council are also credible because the members of its governing body are independent and well-qualified. Previous reports cover: GM crops for global justice; Intellectual Property Rights; Foot and Mouth Disease; Farming animals for food—towards a moral menu; Novel foods; Drug use in farm animals. Details available from [www.foodethicscouncil.org](http://www.foodethicscouncil.org).

**Seeds of Deception: Exposing corporate and government lies about the safety of genetically engineered food. (2004). Jeffrey M. Smith. Originally published in the USA by Yes! Books, PO Box 469, Fairfield, Iowa 52556. Published in UK by Green Books, Foxhole, Dartington, Totnes, Devon TQ9 6EB. ISBN 1-903998-41-7. SB. 254pp. £9.95. G.M. Smith is the Founder and Director of the Institute for Responsible Technology**

The author of this book has researched his material extensively and he provides a wealth of information on the story of how genetically modified crops have been developed and commercialized. It is not a positive history. The author aims to “expose corporate and government lies about the safety of genetically engineered food”. His account presents a plan to gain control a large segment of the world food and feed market by powerful international business organizations. Though the commercial target is worldwide, the company control is largely in the West with much financial investment and political support from the USA. The author’s thesis is that the exercise of power has been unethical by business and government. Although a polemic, the book is not emotional. The case is lucidly built by facts with dates, data, letters, experiences of independent academics and journalists. The findings

give evidence of thorough research and are presented convincingly. For the scientist the story is very saddening; for the democratic citizen it is disquieting; and for the consumer frightening. If only half of the evidence quoted is true then there is enormous need for new governance of science used in commerce as advocated in the book “Just Knowledge?” which is reviewed above. The science used by the commercial organizations is a story of new products based upon unpublished research being brought quickly to market with limited testing accompanied by power politics to gain official approval. Evidently, inconvenient data is ignored, hidden or denied and there is massive use of legal powers to maximize ownership of genetically modified products for private commercial purposes. The book can be read from several points of view. It can be read as a highly successful business plan which might be commended by business schools. However, the author alleges that the business plan was designed in such a hard-nosed manner, carried out ruthlessly with deceit and abuse of power without regard for the safety of the product, health of consumers or care of the environment. In other words, it has been unethical from conception onwards. Leaving the scientific arguments to one side, the story of genetically modified food being introduced to the world has been tragic. The methods used have divided people, communities and nations resulting in government enquiries, civil disobedience and law cases. It is not the type of behaviour which builds civil society. Even from the viewpoint of business schools the saga presents a case study of how not to behave. Business schools now placing great emphasis upon ethics as a central component of business plans and have a major objective to build community. Another perspective might come from those who oppose genetically modified food—a movement which started in Europe when GM products first arrived. At the time, consumers in the USA were eating GM foods apparently without concern or even without knowledge since the official US government position was that the new products are substantially equivalent to non-GM Food. This naïve view was broken by the cases of GM foods causing illness. These cases are documented carefully by the author showing how the food was withdrawn—apparently without

apology or regret. The evidence presented by the author provides a trail of such unethical behaviour that the reader well understands not only the opposition to GM foods but also the way in which the companies have lost their reputation for transparency, accountability and stewardship. Of course, the reader cannot verify the fine details which the author has unearthed but the public furore which everyone knows about provides a great deal of support for the view that something is basically wrong. The book has a ring of truth. From the scientific and community of life perspective there is a real and deeper tragedy. Gene-technology is a remarkable new scientific discovery with apparent potentials to solve some of the hitherto intractable problems in agriculture and food. The way in which the technology has been used and privatized by a few companies intent upon rapid economic returns has created controversy and blackened the character of the new technology to the extent that the public, at any rate outside the USA, are now immensely suspicious. For that reason the rush to market has dealt a blow to the credibility and independence of scientists that will be hard to recover. The story of genetically modified food to date provides a master class in how scientists in private industry may have succeeded as technologists but have failed to understand the deeper issues of quality of life. It is an outstanding example of why many other independent scientists are now calling for ethical behaviour and standards to be observed throughout the food system.

**The Pesticide Detox: Towards a more sustainable agriculture. (2005). Jules Pretty (Ed) plus 28 specialist authors. Earthscan Publications, London and Sterling, Virginia, USA. ISBN 1-84407-142-1. SB. 294pp. £14.95. Professor Jules Pretty is Professor of Environment and Society at the University of Essex, UK**

The book is written by 29 highly competent specialists with extensive and deep knowledge of pesticides, chemistry, farming, ecology, health, food, environment, economics and policy making. They are drawn from many countries where they have experience in the use of pesticides. They include Hans Herren, recipient of the World Food Prize,

plus high profile scientists working at the International Rice Research Institute, International Potato Centre, FAO, Centre for International Forestry Research, International Centre of Insect Physiology and Ecology, plus university and research scientists engaged in agricultural development in a variety of countries. Experts on the International Code of Conduct on the Distribution and Use of Pesticides also contribute. The book is a compilation of chapters on selected subjects that together constitute a larger picture on the changes needed for pest and pesticide management to achieve sustainable agriculture and food production. The possibilities of change from current practices are illustrated by cases from both developing and developed countries. At present 2.5 billion kg of active ingredients worth US\$25–30 billion are used annually with about 20% in the USA. Sales are declining in the developed world and commerce is seeking new customers in the developing countries where regulatory patterns are less consistent, often poorly implemented with ineffective information to the local users. The health of those working with pesticides is a major issue covered well and revealing the lack of understanding and reporting of illness due to misuse. The impact of pesticides on the environment is assessed. Pesticide research, development and marketing are now concentrated in only six companies worldwide. Many hazardous chemicals continue to be available and used in developing countries. The possibilities of using agrobiologicals is reviewed including bacteria, fungi, viruses nematodes and other organisms and biological substances. The necessity for good management planning and controlled use of pesticides is emphasized. An important chapter examines the reasons why pesticides are so widely used, what are the human factors driving this use and what are the effects upon the sustainability of the food chain. Interesting examples are given of low or no-pesticide systems in the tropics—an approach which the authors commend highly for its ability to avoid the high levels of human poisoning experienced in some developing countries. These examples come from Africa, Asia and Latin America and cover a wide variety of crops. The transition to safe pest management systems in industrialized agricultural systems is described. The book lays bare the

attractions and dangers of using pesticides not only for its bad effects upon human health but also for the negative effects on sustainability of the whole of the agro-ecosystem on which so many people depend for food and other life resources. The authors conclude that there is enormous potential for reduction in the use of pesticides. They highlight the need for ethical behaviour by the companies, regulation by governments and emphasize the important role of the consumer in applying market pressure by buying food grown without use of pesticides.

**Ethics in Food and Agriculture: 1st Session of Panel of Eminent Experts. (2001). FAO. Viale delle Terme di Caracalla, 00100, Rome, Italy. ISBN 92-5-104558-5. SB 26pp**

FAO set up a Panel of Eminent Experts on Ethics in Food and Agriculture in 2000 with Terms of Reference to raise public awareness and to advise the Director-General of FAO on ethical issues in food and agriculture. The eight are drawn from all regions of the world and commendably are not simply philosophers. Their background is mainly in science especially in genetics and genetic resources, nutrition, justice and human rights, fisheries, animal and plant health. They are leaders in research or governmental bodies in their countries and are involved in the economic and civil society aspects of human development. Certainly they are eminent, several having received awards for their service to agriculture, food and community. They consider that the fundamental ethical commitment of FAO is to ensure humanity is free from hunger, that everyone has access to adequate food while also engaging in the conservation and management of natural resources for present and future generations. The panel noted but set aside the alternative systems of ethics such as utilitarian, libertarian, actions, consequence and outcomes and they also recognized that cultural values influence ethical positions. They took the ethical position of the Universal Declaration of Human Rights in which separate rights are taken to be interdependent and indivisible. They include the right to an adequate standard of living embracing food plus the right to benefit from the achievements of science. The Declaration requires people to

go beyond self-interest and to care for one another and to share the common resources of the earth. The Panel consider that the most urgent ethical task is to assess activities relating to food and agriculture in the light of reduction of poverty, hunger and malnutrition. The key aspects of these problems are explained and include: ecosystem management, buffering the consequence of agricultural intensification; counteracting the negative research consequences of concentration of economic power and education and information. The panel gave special attention at their first meeting to biotechnology including genetically modified organisms and to the intense debate generated by GMOs. They emphasized the need for risk assessment uncertainties and doubts about the use of GMOs concerning health, the environment, biodiversity and they argued for proper evaluation of potential benefits and problems arising. They took the position that Intellectual Property Rights systems that restrict the use of naturally existing genetic material over a wide spectrum from genes to organisms and species should not be allowed. They are somewhat negative about the use of patents. Their position, clearly stated in the publication provides encouragement to those many people including scientists who now consider that ethics is not another element which may or may not be necessary for a viable and effective food system in the world. The panel give it central place in guiding policies, research and implementation. Although they do not represent leaders of business organizations they clearly address the behaviour of leaders in commerce. They form a thoughtful and experienced group of leaders in agriculture and food from different regions of the world; and their view that ethics is an essential component of the way to a sustainable future is a powerful posture.

**Ethics in Food and Agriculture: 2nd Session of Panel of Eminent Experts. (2003). FAO. Viale delle Terme di Caracalla, 00100, Rome, Italy. ISBN 92-5-104896-7. SB 26pp**

The second session of the FAO Ethical Panel was held in 2002 and addressed specifically: ethical limits and challenges in the intensification of agriculture, ethics and economic globalization, shar-

ing the benefits of biotechnologies, the impact of TRIPS, UPOV and Farmers' Rights, GMOs and the ethics in participation, monitoring and accountability. Their aim was not to prepare specific recommendations which they intend to produce later. This session pursued a more detailed examination of the key issues with a view to guidelines at the third session. They were motivated by the global emergency of hunger and recognized that the causes are multi-dimensional and not easily overcome by one single solution. They also concluded that the states in which hunger is a problem cannot solve this problem alone. On the topic of intensification, the panel emphasized the social responsibility of all involved for sustainable development involving ethics and ecologically sound practices. They consider that, at the least, intensification should not lead to more impoverishment and social disruption. They again expressed concern that the benefits of science must be shared by all in the world. Food security also figured in their review of this area. They acknowledged the importance of the farmer–curator in small scale operations in many countries and consider that there are good grounds to support these farmers upon whom the world depends for biodiversity, cultural harmony and respect for future generations. They also argued for developed countries to establish rules for food production to be sustainable and expressed concern about corporations that are based in the West but operate unsustainably in developing countries. On globalization, the panel were concerned at the concentration of power which means the playing field is not level. They also felt uneasy about the transition of public services and regulations to privatization and deregulation which also reduces the space for democracy. They call for a balance between economic freedom and ethical solidarity, arguing that the market cannot be the sole governor of social and economic processes. Market globalization must be matched by responsible and responsive global governance and governments must recognize their duties to offset the negative consequences of globalization and to advance the conditions that generate equal opportunities for all. On the sharing of biotechnologies they are concerned about the monopoly rights given by patenting. They call for new ways to share the benefits of biotechnologies. On the Agreement on Trade-Related

Aspects of Intellectual Property Rights (TRIPS) of the WTO and the system of protection sought by the International Union for the Protection of New Varieties of Plants (UPOV) and Farmers Rights' the panel recognised four core ethical issues. These are: Risk of transferring knowledge from the public to the private domain; Likely negative impact of TRIPS on poor farmers; Uncertain impact on a sustainable supply of affordable safe nutritious food for consumers with limited income; and Environmental impact. They agreed to investigate these issues in greater depth in future. On GMOs the panel emphasized the importance of participation and information; monitoring and oversight processes; socio-economic effects and accountability. Both the FAO reports provide an extraordinarily objective, balanced, independent and therefore valuable voice upon the current confusing situation.

**Food Safety: Science and Ethics. Report of the FAO Expert Consultation. (2004). No.1 in FAO Ethics Series. FAO. Viale delle Terme di Caracalla, 00100, Rome, Italy. ISBN 92-5-105070-8. SB 41pp**

This is the first publication in the FAO Ethics Series and is a product of an Expert Consultation linked to the Codex Alimentarius in collaboration with the World Health Organization in 2002. The aim was to define value judgements included in risk analysis; to provide practical guidance for improving risk communication; to recommend food safety policy and procedures in the context of food aid situations; and to recommend food safety policy in relation to the "right to food". Risk analysis involves three phases: assessment, management and communication, all of which involve value judgements. The triggering event can be of great ethical import indicating that someone considers that potential harm could occur. The relationship between values and ethics is less than transparent in many cases so there is a need for a broader social cultural environment. Food safety nearly always involves competing values and interests which need to be given high priority in risk assessment. The problems become acute in the cases of food shortage and famine where survival is at stake. The question of double standards is then raised. The publication concludes that essential issues are: transparency and good communication.

There is also a place for governments to involve NGOs in the processes of decision-making for they are often key players in the business of supplying feed in emergency situations. There is a most interesting section on the place of science within the food safety process.

**Ethics of Sustainable Agricultural Intensification. (2004). No. 3 in FAO Ethics Series. FAO. Viale delle Terme di Caracalla, 00100, Rome, Italy. ISBN 92-5-105067-8. SB 26pp**

This is the third book in the new FAO Ethics Series. The authors are not identified. Population growth provides a utilitarian argument for intensification whereas traditional virtues of leadership might favour intensification for the good of society. But in modern society the authority to pursue such good is also constrained by the rights of others which lead to the need for an ethical rationale. The publication argues that only a comprehensive framework relevant to the world today is adequate. This leads the authors to two specific ethical models. First Kant's deontology that he called the categorical imperative which means that one must never act in a way that treats another person solely as a means to an end. Rights and duties trace back to this principle. The publication examines this argument historically and seeks to bring it into the 21st century in relation to human rights and intensification. The second ethical model which is contrasted with the Kantian model is the utilitarian model which is frequently the basis for seeking for technological progress such as using biotechnology. A position can be taken against this—for example that some consumers should not be obliged to eat genetically engineered crops against their will. Comparisons are made with the green revolution earlier which for many was based upon the utilitarian rationale and which many scientists still consider is sufficient justification to use all productive science for improved food production. However the publication also considers that many people today associate ethics with less systematic ways of thinking. For example, people ask themselves how some exemplary person would act in a given situation. This is essentially a virtue based approach. It may lead to the concept that special leaders can make decisions for all provided that they practice the principle of caring for all others affected by the decisions. This approach

of delegating upwards conflicts somewhat with the democratic principle of consultation and majority rule—which may result in a different and less positive outcome from what an informed leader might decide on behalf of the whole community. There is a very interesting section on who is responsible for making such decisions. The writer(s) make some interesting comparisons between different agricultural communities and specifically note that the Old Order Amish established in Europe and now scattered worldwide practise farming that relies heavily upon virtue ethics and leads much more slowly, if at all, into intensification. The point is also made that since the Neolithic or Cultural Revolution when humanity began to practise agriculture, progress has continued slowly but steadily. However the forms of farming which we have inherited from our forebears have always been sustainable. We are now in running the risk of developing an unsustainable agriculture which will leave problems of survival for our successors.

**THE 56TH EAAP ANNUAL MEETING  
SWEDISH UNIVERSITY OF  
AGRICULTURAL SCIENCES  
UPPSALA, SWEDEN. 5–8 JUNE 2005**

**Welcome to Sweden**

The Annual EAAP Meeting this year is earlier than normal. Registration without late fee was completed by 1 April 2005. The meeting will be held at Uppsala, Sweden from 5-8 June 2005 accompanied by many Satellite Meetings before and after the main meeting. The main scientific theme is: "Impact and Challenges for Animal Production and Research of Widening Europe". The conference will start with registration, opening ceremonies and a welcome reception at Uppsala University. All scientific sessions and the poster exhibition will take place at Ultuna Campus of the Swedish University of Agricultural Sciences. The official working language of the meeting is English. Sessions of commissions, seminars, courses, and workshops will not be translated. A programme for Accompanying Persons is also available plus a social programme, technical tours and exhibitions. The programme is hosted by the Swedish University of Agricultural Sciences and the Swedish Dairy Association.

## Organising Secretariat

Full details may be found at the website shown below or from the Secretariat:

Academic Conferences, P.O. Box 7059, SE-750 05 Uppsala, Sweden. Tel.: +46-1867-2084. Fax: +46 1867-3530. E-mail: [EAAP2005@slu.se](mailto:EAAP2005@slu.se).

Web site: [www.conference.slu.se/EAAP2005](http://www.conference.slu.se/EAAP2005).

## FUTURE EAAP ANNUAL MEETINGS

**2006: 57th EAAP Annual Meeting** will be held from 17–20 September in Antalya, Turkey.

**2007: 58th EAAP Annual Meeting** will be held from 1–5 September 2007 in Dublin, Ireland.

**2008: 59th EAAP Annual Meeting** will be held in Lithuania.

**2009 or 2010: The EAAP Annual Meeting** will be held in Greece.

## EAAP NOTICES

### WAAP Book of the year 2003.

**“WAAP Book of the Year—2003: A Review on Developments and Research in Livestock Systems”. (2004). Edited by A. Rosati, A. Tewolde and C. Mosconi. A new book series by the World Association for Animal Production (WAAP), Via Tomassetti, 3 00161 Rome, Italy and Wageningen Academic Publishers. 317 pages, cloth binding—ISBN 9076998477— € 99**

[www.WageningenAcademic.com/WAAP2003](http://www.WageningenAcademic.com/WAAP2003)

The World is presently faced with an accelerating demand for animal products issued from safe and friendly production conditions. The World Association for Animal Production (WAAP) was founded in 1956 under the auspices of EAAP and FAO to contribute to spreading of results of research in Animal Science to sustain production.

Since then, WAAP has grown into a Federation of 17 International Associations involved in Animal Production in the five continents. The most recent meetings of the WAAP were held in Seoul, Korea in 1998, and in Porto Allegre, Brazil in 2003. The present

book prepared at the initiative of the WAAP Council has been completed in six months by 60 enthusiastic contributors engaged in the activities of the WAAP and well known as specialists in Animal Science involved in research, teaching, and extension. It is divided into four sections concerning the Development of livestock systems (6 chapters), Achievement of Research (19 chapters), Contemporary issues (5 chapters), and Statistics, updated at the end of 2002.

The development of livestock systems concerning major farm animals is presented in specialised areas of the world including South America, North America, Asia, Oceania, Africa and Europe. Marked improvements have been observed in tonnage of animal products during the past 20 years, amounting for instance 75 Mt per year of beef carcass equivalent in Brazil compared to 7.4 Mt in Europe. More important, the annual rate of change in productivity per worker raised 17% per year during the last ten years in Uruguay during the last 10 years.

Major changes in management practices, particularly in feed production to management of wastes are described. In the case of meat production, the growing importance of species producing white meat (pig and poultry) is particularly acknowledged. New knowledge and achievements in research are described in the field of genetics, reproduction, growth, feed technology, livestock systems, and bio-security in the case of all farm species, including poultry species used for egg and meat production. Original data is presented on minor less known species like camelids, buffaloes, reindeer. Ethical, social and economic issues are particularly presented as hot topics. Contemporary issues included the consequences of the outbreaks of new diseases, the use of natural resources, the appropriate use of chemicals, feed additives and drugs, the survival of small holders, the impact of genetically modified plants. Hypotheses are raised and discussed on the potential move in the near future derived from scientific knowledge, such as patenting in animal breeding and genetics. In addition, economical changes include a predicted change in production areas, such as beef production moving to the Amazonian area and to Oceania, a move of dairy production to the area of ethanol production leaving large amounts of cheap feed in North America and a huge development of poultry / pig production in the South East of Asia.

Detailed tables of updated statistics mainly supplied by the FAO and including animal numbers and yearly production 1985–2002, total and agricultural population are available at the end of the book.

WAAP Book of the year can be strongly recommended to teachers, students, scientists responsible for

planning future original research in Animal Science, but also to policy makers responsible for the development of friendly and efficient agricultural systems of animal production.

*A. Aumaitre and A. Rosati,*  
*EAAP Rome*

### Best Posters by Young Scientists presented in each Study Commission EAAP Annual Meeting in Bled, Slovenia in September 2004

Commission	Name	Country	Session	Paper title
Livestock Farming Systems	O. Renault	France	LMP 3.13	Temporal variability of suitable habitats for waders: does grazing management help?
Pigs	M. Noventa	Italy	P 4.36	Analysis of firmness of dry cured hams in relation to fresh and dry cured hams traits
Physiology	Not communicated			
Cattle	M. Iacurto	Italy	C 4.9	Comparison of rearing systems at low environmental quality meat of beef cattle in central Italy
Sheep and Goats	Not communicated			
Genetics	E. Norberg	Denmark	GM 2.21	Genetic parameter for electrical conductivity of milk
Nutrition	No good poster considered			
Horses	Not communicated			
Management and Health	Not communicated			

### Politiek Award for Best Poster

#### EAAP Annual Meeting in Bled, Slovenia, September 2004

The winner is Saeed Zerehdaran, The Netherlands. The poster title was: Effect of age and housing system on genetic parameters for broiler carcass traits. (Genetics Commission)

### Best Papers by Young Scientists in each Study Commission EAAP Annual Meeting in Bled, Slovenia, September 2004

Commission	Name	Country	Session	Paper title
Livestock Farming Systems	A. Bernues	Spain	LCNS 2.4	An integrated approach to study the role of grazing farming systems in the conservation of rangelands
Pigs	S. Malovrh	Slovenia	PG 6.4	Covariance functions for modelling weight gain in pigs
Physiology	M.A. Thielen	Germany	Ph 2.3	Haptoglobin gene expression in bovine and human leukocytes in blood and bovine somatic cells in milk
Cattle	B. O'Brien	Ireland	C. 3.5	Labour efficiency and multi-functionality on Irish dairy farms
Sheep and Goats	A. Legarra	Spain	S. 4.3	A rational to introduce more traits in the Latxa breeding program
Genetics	B. Hayes	Norway	G 4.2	Large scale discovery of Single Nucleotide Polymorphism (SNP) markers in Atlantic Salmon ( <i>Salmo salar</i> )
Nutrition	J.J. Murphy	Ireland	N 4.4	Comparative evaluation of grass silage, fermented whole crop wheat silage, urea-treated processed whole crop wheat and maize silage in the diet of early lactation cows
Horses	J. Curick	Croatia	H 4.6	Quantitative inheritance of the coat greying process in horse
Management and Health	Not communicated			

## EAAP CHANGE OF ADDRESS

The Secretariat of EAAP has moved and the new address in Rome, Italy is:

### EAAP

Via G. Tomassetti 3

00161 Rome

Italy.

New telephone number: +39-06-44-20-26-39

Unchanged fax number: +39-06-863-29263

Unchanged Email: [eaap@eaap.org](mailto:eaap@eaap.org).

The changes of address also applies to the Secretariats for World Association for Animal Production and the International Commission for Animal Recording. The new Secretariat for Rare Breeds International is given below.

### Wageningen Academic Publishers/EAAP Publications

Wageningen Academic Publishers publish books in the EAAP Technical Series. In addition to the current WAAP Book of the Year-2003, another 50 titles are available. The full list of titles together with discounts that are available at the EAAP Annual Meetings is available at the internet bookshop [www.wageningenacademic.com/bookshop](http://www.wageningenacademic.com/bookshop). Information also available at from Mike Jacobs, at email: [jacobs@wageningenacademic.com](mailto:jacobs@wageningenacademic.com).

## RARE BREEDS INTERNATIONAL REPORT

### Rare Breeds Secretariat

The RBI Secretariat is now located at a provisional address where all information is available. Ms. Ekaterini Konsultu or Professor Andreas Georgoudis, Aristotle University, Faculty of Agriculture, Department of Animal Production, Animal Breeding and Genetics, 541 24 Thessaloniki, Greece. Emails: [konsultu@agro.auth.gr](mailto:konsultu@agro.auth.gr) and [andgeorg@agro.auth.gr](mailto:andgeorg@agro.auth.gr) Tel.: +30-2310-998687/83. Fax: +30-2310-998719.

### International Conference, South Africa 10 to 14 October 2005

This International Conference will be held from 10-14 October 2005 at Aventura Loskop Dam Resort in

Mpumalanga Province, South Africa. This resort is in a nature reserve and has good accommodation and conference facilities. It is near the Nguni Breeding/Research Station owned by the ARC Animal Improvement Institute. Additional valuable features are game viewing and a day at the Nguni project. There is also good angling in the Loskop dam for those who are interested.

A key theme will be the FAO State of the World's Animal Genetic Resources with priorities identified by countries and future possibilities for conservation and development of AnGR.

Co-operative partners in the RBI Conference include: FAO, the SADC Livestock Sector; and the Developing Animal Agriculture Interest Group of the South Africa Society of Animal Science. Registration fee will be all inclusive (accommodation plus registration and will include membership of RBI).

### Further information:

*Dr. Antionette Kotzé.*

*Email: [elsabe@idpi1.agric.za](mailto:elsabe@idpi1.agric.za).*

*Dr. Keith Ramsay. Email: [keithR@nda.agric.za](mailto:keithR@nda.agric.za).*

*Cesare Mosconi. Email: [mosconi@eaap.org](mailto:mosconi@eaap.org).*

*Websites: [www.rbi.it](http://www.rbi.it) or [eaap.org](http://eaap.org).*

The following RBI International Conference will be held in Vietnam in 2007.

## FORTHCOMING CONFERENCES OF INTEREST TO EAAP

(in date order)

### NEW FINDINGS IN EQUINE PRACTICES

This conference will be held from 22–23 June 2005 in Milan, Italy.

Information: [www.eaap.org](http://www.eaap.org).

## THE XX INTERNATIONAL GRASSLAND CONGRESS

**Dublin, Ireland: 26 June–1 July 2005**

The International Grassland Congress (IGC) is the premier world event for grassland research and development and the XX Congress will be held in Dublin, Ireland from 26 June to 1 July 2005 to be followed by five concurrent satellite workshops of 3–4 days: Aberystwyth, Belfast, Cork, Glasgow and Oxford.

**Information:** Congress Secretary, Dr. Frank O'Mara, Department of Animal Science, University College Dublin, Belfield, Dublin 4, Ireland, Tel.: +353 1 716 7142. Fax: +353 1 716 1103. e-mail: [igc2005@ucd.ie](mailto:igc2005@ucd.ie) Web site <http://www.igc2005.com>.

#### **AQUACULTURE: OPTIMIZING THE FUTURE**

This conference will be held from 5–9 August 2005 in Trondheim, Norway. Information: [www.eaap.org](http://www.eaap.org).

#### **4TH ALL AFRICA CONFERENCE ON ANIMAL AGRICULTURE 23–26 September 2005**

The title of this Conference is: Role of Biotechnology in Animal Agriculture to address Poverty in Africa: Opportunities and Challenges. It will be held in Arusha, Tanzania from 23–26 September 2005 in Arusha, Tanzania. Information: [www.eaap.org+links](http://www.eaap.org+links).

#### **MEDITERRANEAN SYMPOSIUM International Symposium on Comparative Advantages for Typical Animal Products from the Mediterranean Areas 25–27 September 2005**

The EAAP Mediterranean Symposium held regularly in co-operation with other bodies in the Mediterranean will be held in Vale de Santarém Portugal from 25–27 September 2005. All the information regarding editorial requirements for authors, accommodation, registration from: Estacao Zootechnica Nacional, 2005-048 Vale de Santarem, Portugal. Email: [director.ezn@mail.telepac.pt](mailto:director.ezn@mail.telepac.pt).

Website : <http://horta.ocatch.com/medsymp/> Tel.: +351-243-767-321/5 Fax: +351-243-767-307.

*Programme includes main session on the following topics*

- 1— Animal production economy and social impact in the Mediterranean area
- 2— Utilisation of natural resources on the animal production systems
- 3— Possibilities for improving traditional systems
- 4— Quality and traceability of typical products
- 5— Round Table-From traditional to certified animal products?

#### **8TH WORLD CONGRESS ON GENETICS APPLIED TO LIVESTOCK PRODUCTION**

This Congress will be held from 13–18 August 2006 at Belo Horizonte, MG, Brazil. Information—Email: [secretariat@wcalp8.org.br](mailto:secretariat@wcalp8.org.br) Fax : +55-31-3494-6025. Website: [www.wcalp8.org.br](http://www.wcalp8.org.br).

#### **IN MEMORIAM**

**Dr. Otto Hartmann, Austria  
1933–2003**



Dr. Otto Hartmann, one of Austria's most outstanding animal breeding specialists for decades, passed away in Vienna on 5th July 2004 at the age of 71 years, after a long, patiently borne illness. The advances in Austrian animal breeding and production are closely associated with the work of Otto Hartmann.

Born in Vienna in 1933 he attended a high school for the humanities and he read agriculture at the

‘Universität für Bodenkultur’ in Vienna. He then worked for two years as a research assistant at the institute for animal breeding and nutrition and obtained his doctorate with a thesis on “The Introduction of Genetic Evaluation into Austrian Cattle Breeding”.

His professional career started in 1955 as an animal breeding assistant and adviser to several cattle breeding associations who benefited from his profound knowledge, and for two years as a lecturer at the state farm school in Altmünster, Upper Austria. In 1960 he became a staff member of the Department of Animal Breeding in the Federal Ministry of Agriculture and Forestry in Vienna where he continued to work until his retirement in 1993. In this capacity he was exposed to all fields of animal breeding and husbandry. In 1975 he was given responsibility for the unit dealing mainly with cattle breeding, in 1976 he was correspondingly promoted to ‘Ministerialrat’, and in 1979 he became Head of the Department. From 1979 to 1993 Dr. Hartmann was also the Managing Director of the Central Federation of Austrian Cattle Breeders (ZAR) in Vienna.

During these years his outstanding accomplishment was the modern breeding concept for all existing cattle breeds in Austria which he developed in cooperation with the Chambers of Agriculture and the Breeding Organisations, and its practical implementation. As one of the pioneers he utilised the possibilities of automated data processing and in return he made his experience available to the agricultural and forestry data processing centre, also as its vice chairman for many years.

His special attention and concern was focused on the implementation, financing and the necessary technical equipment of performance recording in animal production, especially milk recording. The further refinement of genetic evaluation through BLUP procedures and more rational and cost-effective performance recording were important fields of activity. Otto Hartmann’s enormous technical knowledge, his pedagogic skills, his ability to find a consensus and his international experience contributed substantially to make Austria’s animal breeding and production ready for EU entry. He also paid sustained attention to the planning and implementation of farm oriented research in the Federal Research Centres for Animal Production under his supervision and prepared

and implemented the necessary restructuring and adaptation.

Otto Hartmann’s solid technical know how and impressive personality were acknowledged through appointments to national and international animal breeders’ committees and associations. For many years he was a member of several study commissions of the EAAP and co-organiser of the EAAP Annual Meetings in 1962 in Baden near Vienna and in 1973 in Vienna. From 1980 to 1986 Dr. Hartmann served as an EAAP auditor and from 1986 to 1992 he was a Council member. In appreciation of his services rendered to the EAAP he earned the “Distinguished Services Award” in 1995.

From 1966 to 1970 Dr. Hartmann was vice president and from 1970 to 1974 president of the organisation which is now called the International Committee on Animal Recording (ICAR), and in this capacity he devoted great energy to the further development of animal recording and electronic data processing. In 1974 and 1992 the ICAR meetings were held in Austria under his organisation and leadership.

For many years Dr. Hartmann was also active and successful in local politics. For twenty years he served as mayor of his home community Pressbaum near Vienna. In 1978 he was awarded the large order of merit of the Republic of Austria and he earned other distinctions.

With the passing away of Dr. Otto Hartmann Austria’s agriculture, especially the livestock sector, lost a personality with a lasting impact on the future of cattle breeding on which future generations can build. We also lost an outstanding civil servant, director and local politician and a true friend, amiable colleague and companion. His family – especially his wife Gertraud – lost a caring husband and father of four grown up children.

*Klaus Meyn, Germany*

*With input from Austrian colleagues: Norbert Ratheiser, Joseph Lederer and Franz Sturmlechner*

## PERSONAL NEWS

### **The International Dairy Federation 2004 Awards**

The 2004 IDF Awards were presented to Dr Lawrence Kenneth Creamer (New Zealand) and

Professor Pierpaolo Resmini (Italy) at the IDF World Dairy Summit 2004 in Melbourne in November 2004.

Dr Lawrence Kenneth Creamer works at the Fonterra Research Centre, formerly New Zealand Dairy Research Institute. The award is made in recognition of exemplary service and leadership in dairy chemistry research and development.

Professor Resmini is in the Department of Food Science and Technology (DISTAM) at the State University of Milan (Italy). His studies have contributed to the advance in applied dairy science with a relevant economic impact.

## NEWS FROM MEMBER COUNTRIES

### Agricultural Genetic Resources in the Alps

A hundred livestock breeds in the Alpine countries are acutely endangered. This was the most important finding of a study on “Agricultural Genetic Resources in the Alps” in 1992/93. Especially alarming was the fact that, in 40% of cases, there appeared to have been no attempts to conserve the endangered breeds.

This study is now updated, including a detailed study on the situation of cultivated plants. Since the first study, not only the sizes of the remnant populations have changed, but so have the legal and political conditions in these Alpine countries, ranging from France to Slovenia. The publication of the Bristol Foundation (178 pages with 98 coloured illustrations) contains the synthesis in 5 languages, and the enclosed CD-ROM contains the full text of the study in English and German (512 pages). The text is designed as reference book with important contact addresses. The integrated search function facilitates the search for certain expressions or simply to surf in the text. Websites and e-mail addresses are activated so that either browser or e-mail program may establish the desired link automatically.

For orders in any bookshop please use ISBN 3-258-06669-8 or contact Haupt-Verlag, (<http://www.haupt.ch>), Falkenplatz 14, CH-3001 Bern (Price: EUR 24.-/CHF 36.-).

**Monitoring Institute for Rare Breeds and Seeds in Europe** *Schneebergstr. 17, CH-9000 St. Gallen / Switzerland. E-mail: [info@monitoring.eu.com](mailto:info@monitoring.eu.com) Website: <http://www.monitoring.eu.com>.*

## INTERNATIONAL NEWS

### The Domestic Animal Diversity Network (DAD-Net)

The Domestic Animal Diversity Network (DAD-Net) is managed by the Animal Production and Health Division of FAO. The purpose of this electronic service is to provide an informal forum for the discussion of issues relevant to the management of animal genetic resources at national, regional and international levels.

After free registration, users have open access to the network and are invited to browse through the articles, publications and information the network offers. Users are encouraged to post messages on topics of interest related to the management of animal genetic resources, and are also invited to contribute articles or other information in English, French or Spanish dealing with the following subjects: characterization, conservation, utilization, breeding, data and information management, training and education, emergency planning and response, research and technology transfer, and any other subject they consider relevant to animal genetic resources. FAO will periodically contribute information and act as moderator.

If you wish to become a member of the DAD-Net, please complete the form and send it to [DAD-IS@fao.org](mailto:DAD-IS@fao.org)  
Name: Family name: Organization: Department: Postal address: Phone: Fax: E-mail address: Main areas of interest:

#### Information please contact:

**Beate Scherf, Animal Production and Health Division FAO, Rome 00100 Rome, Italy. Tel.: +39.06.570-53540 Fax: +39.06.570-53927.**

**Website: <http://www.fao.org/dad-is/>.**

### Winter 2005 Newsletter of the European SAVE Foundation (Safeguard for Agricultural Varieties in Europe)

Summary of the contents:

- Fruit-Net: Neglected and forgotten Fruit and Berries
- International Conference on Animal Disease Control
- Terra Madre
- Newsflash (3)

Contents of this newsletter are available at the Web: <http://www.save-foundation.net/english/actual.htm>.

**Further information: SAVE Foundation, Paradiesstr. 13, D-78462 Konstanz, Germany Tel.: +49-7531/455 940. E-mail: [office@save-foundation.net](mailto:office@save-foundation.net) Website: <http://www.save-foundation.net>.**

### **International Goat Association**

The International Goat Association held their 8th International Goat Conference in Pretoria, South Africa. Full details of the Conference papers, activities of the Association and the Journal are available at: [www.iga-goatworld.org](http://www.iga-goatworld.org) or by email from: [goats@heifer.org](mailto:goats@heifer.org).

### **International Dairy Federation (IDF)**

The First IDF Bulletin in electronic form is now available-The Way Ahead. For further information, please contact Marylene Tucci, IDF Communications and Public Affairs Tel.: +32 2 706 86 44, Fax: +32 2 733 04 13 E-mail: [MTucci@fil-idf.org](mailto:MTucci@fil-idf.org) or visit the range of IDF Publications on the IDF website at <http://www.fil-idf.org/content/default.asp?PageID=311>.

### **IDF Report on Research to Unlock Health Benefits of Dairy Products**

For further information, please contact: Marylene Tucci, IDF Communications and Public Affairs Tel.: +32 2 706 86 44, Fax: +32 2 733 04 13 E-mail: [MTucci@fil-idf.org](mailto:MTucci@fil-idf.org) or Ramsay Smith at Media House on 0141 226 3700 or visit the website at <http://www.fil-idf.org/DST2005/>.

## **REPORTS OF MEETINGS**

### **Biology of Lactation in Farm Animals**

#### **Report on the 7th EAAP/ASAS/COST Workshop 9–10 September, 2004, Bled, Slovenia**

The 7th Workshop on “Biology of Lactation in Farm Animals” (BOLFA), traditionally jointly organized by the European Association of Animal Production (EAAP) and the American Society of Animal Science

(ASAS) was this time additionally joined by the European Cooperation in the Field of Scientific and Technical Research (COST) action B20 “Mammary Gland Development, Function and Cancer”. The programme chairs were Rupert M. Bruckmaier, Martin T. Sorensen, Peter Dovc.

The workshop was held in Bled in the beautiful and scenic surroundings of the Slovenian Alps, immediately following the EAAP Annual Meeting 2004. Eighty five persons attended the workshop which lasted for two days and covered five major topics: Interactions between lactation and the post-partum anovulatory period in different species (chaired by Heinrich H. D. Meyer, Technical University, Munich, Germany), the steroid hormone super-family signalling mechanisms in the mammary gland (chaired by Craig R. Baumrucker, Penn State Univ., USA), immuno-physiology of the mammary gland: interactions between metabolic status and immunological status (chaired by Pierre Lacasse, AAFC—Dairy and Swine R&D Centre, Canada), effects of micronutrients on mammary gland function (chaired by Antonella Baldi, University of Milan, Italy) and genomic approach to the mammary gland biology (chaired by Peter Dovc, University of Ljubljana, Slovenia). The sessions consisted of 15 invited oral presentations and 10 selected short communications. In addition, 23 posters were presented related to these major topics and to various other topics in the field of lactation in farm animals. The sessions focussed on farm animal species including cow, sow, sheep, goat, buffalo and yak, but also seal, rabbit and mouse. All papers were on a high scientific level and represented the current state of research in the respective fields. The full papers of the oral presentations and the abstracts of the poster presentations undergo the usual peer review process and will be published as a special issue of “Livestock Production Science” in 2005. It has been decided that the next BOLFA meeting will be held in Brazil in 2006.

**Prof. Dr. Rupert M. Bruckmaier**  
**Physiology Weihenstephan**  
**Technical University Munich**  
**Weihenstephaner Berg 3**  
**85354 Freising, Germany.**  
**e-mail: [bruckmaier@wzw.tum.de](mailto:bruckmaier@wzw.tum.de).**

## FAO E-MAIL CONFERENCE

### **Molecular marker assisted selection as a potential tool for genetic improvement of crops, forest trees, livestock and fish in developing countries November–December 2004**

#### **Executive Summary**

Marker assisted selection (MAS) is a complementary technology, for use in conjunction with more established conventional methods of genetic selection, for plant and animal improvement. It has generated a good deal of expectations, many of which have yet to be realised. Although documentation is limited, the current impact of MAS on products delivered to farmers seems small. While the future possibilities and potential impacts of MAS are considerable, there are also obstacles to its use, particularly in developing countries. Principal among these are issues relating to current high costs of the technology and its appropriateness, given that publicly funded agricultural research in many developing countries is sub-optimal and development priorities do not necessarily include genetic improvement programmes. Other potential obstacles to uptake of MAS in developing countries include limited infrastructure, the absence of conventional breeding programmes, poor private sector involvement and lack of research on specific crops of importance in developing countries. Intellectual property rights may also be an important constraint to development and uptake of MAS in the developing world. It is hoped that through partnerships between developing and developed country institutions and individuals, including public-private sector collaboration, MAS costs can be reduced, resources pooled and shared and capacity be developed. With the assistance of the Consultative Group on International Agricultural Research (CGIAR) and international organisations like FAO, developing countries can benefit more from MAS. These were some of the outcomes of a moderated e-mail conference, entitled “Molecular marker assisted selection as a potential tool for genetic improvement of crops, forest trees, livestock and fish in developing countries”, hosted by the FAO Biotechnology Forum from 17 November to 14 December 2003. During the four-week conference,

627 people subscribed and 85 messages were posted, about 60% coming from people living in developing countries. The majority of messages came from people working in research centres and universities. The remainder worked as consultants, in development agencies, for farmer organisations, government agencies, NGOs or UN organisations. For more information on this conference, see the website: [www.fao.org/biotech/forum.asp](http://www.fao.org/biotech/forum.asp).

#### **The Mystery and Mystique of Terra Madre and Slow Food Report on the Meeting in October 2004 in Italy by Fiona Chambers—A Breeder of Wessex Saddleback Pigs in Australia and Member of the Board of Rare Breeds International [organic@fernleighfarms.com](mailto:organic@fernleighfarms.com)**

Founded in 1989, Slow Food was established to protect the pleasures of the table from the homogenization of modern fast food and fast life. A mere 15 years on, the worldwide organization currently boasts some 80,000 members. It was in October 2004 that Slow Food hosted a remarkable forum known as Terra Madre (Mother Earth). The vision of Slow Food Founder Carlo Petrini, Terra Madre was a meeting of around 5000 small-scale, sustainable food producers from 128 countries representing 1202 food communities. To put the mammoth nature of this event into perspective, it required 84 coaches and 90 cars to collect participants from 5 different airports and deliver them to the central venue in Turin, Italy. Once centralized, 506 volunteers were used to feed, and assist 4888 delegates onto 112 coaches to transport them each day for 4.5 days to and from 383 different accommodation locations in 110 towns in the Piedmonte Region.

Measurable Outputs, Specific Outcomes, Key Performance Indicators, Defined strategies and Key Learning Areas. Many of us, including myself, are trained to think within the rigid boundaries of these constructs. There is a security in knowing what will be gained from participating in any given event and a sense of power in being able to exercise choice. But Terra Madre was different. In the days leading up to Terra Madre, there was no specified outcome by which to determine its relevance to my future. There was no list of measurable outputs for gauging what I

might come away with. There was no program detailing the subject matter or identifying the speakers. There was just an innate sense that it was something I needed to attend. My airfare, accommodation and food were to be paid for, however, there were still very real costs associated with paying someone to do my work whilst I was away and risks associated with leaving the farm for a time.

Nothing could have prepared me for the sheer scale of this event. For me, the scale of Terra Madre challenged what I held to be true in the deepest corner of my heart. It unleashed my shackles of security and threw me into a global melting pot. It was impossible to ignore the diversity and yet the commonality. It was impossible not to ask of yourself “what role do I play in this global picture?”

My first and lasting impressions were of the people—their diversity and their beauty. Amidst these people I became acutely aware of the material affluence (by comparison) of my living standards and yet the relative void of cultural connectedness in my life. The reserved Massai women were glamorous and colourful beyond words. They jingled as they walked wearing their delicate garments, embroidered with metal ornaments. You could not avoid being impressed by their graceful poise and presence. In my ignorance, I wanted to know the cultural significance of their ear piercings and carvings and their forehead tattoos. I wanted to know what and how they farmed and what it was like to live a nomadic existence. I wanted to ask them how the World Trade Organization and GATT agreements affected them in their daily lives? I don’t think that I can begin to imagine what Terra Madre meant to them.

The women and men from Tibet, also captivated my interest and respect. Adorned with their own heavily embroidered and colourful dresses, shawls and hats, they intrigued me with their display of seeds and hand made bags. Lasting images of the women from Bolivia in their hats presenting a gift to Carlo Petrini stay with me as do memories of the displays of native varieties of corn and pumpkins, and basket crafts and jewellery all set up on empty floor space and a huge array of people wearing assorted national dress. I felt so lacking in my failure to portray any connectedness to my Australian culture and yet somehow, the overall low profile of western cultures was somewhat refreshing.

There were many workshops and plenary sessions run over the 4 days of Terra Madre. Many were interesting, uplifting and thought provoking. But what made Terra Madre different from other conferences was the way in which food producers from food communities least susceptible to industrial processes were represented. It is easy to lose perspective of the role each of us plays in our local community and the not see the broader significance of these contributions. Terra Madre brought small producers together from around the world to be honoured and in doing so helped us to recognize the role of small scale primary and artisan production. The question now is what will happen as a result of the Terra Madre experiences? How will these producers contribute to developing or maintaining legitimate and sustainable farming cultures and rural economies that are mutually supportive across the globe?

For many people, returning home with a commitment to continue to do what they already do will be enough. If Terra Madre has contributed in this way then it has contributed to slowing the loss of cultural and biological diversity and it will have already achieved a lot. Being with other producers from around the world who are working simultaneously in parallel ways was both enlightening and grounding. It’s important to know that you are not on your own when you work in seeming isolation. One Australian delegate told me that for him, the key message that he was taking home from Terra Madre was the importance of organic farming. He planned to convert his business to incorporate organic principles and was committed to pursuing this new direction within his existing craft.

## Conclusion

For me, the effect that Terra Madre has had has been two-fold. Firstly, it has furthered my commitment to walking a pathway based on principles not profit. I believe in the importance in protecting and preserving biodiversity and my passion lies in halting the erosion of animal genetic diversity of domestic farm livestock. To this end I am committed to continuing to breed rare breeds of farm animals incorporating them into my own organic farming system. I am also committed to working at an organizational level to promote the importance of genetic biodiversity and raise aware-

ness of the erosion that is occurring worldwide. In addition, Terra Madre has made me become further committed to developing local food routes. With more than 80% of Australia's agricultural commodities being exported, this thinking is contrary to the existing Australian culture which is driven by economic rationalism. Whilst I am not opposed to exports, I believe that it is important to develop a philosophy of "local first" through supporting local food distribution networks that aim to minimize food-miles and encourage access to fresh local food that is grown sustainably.

Terra Madre touched many people in many ways and it has undoubtedly made a difference and I believe that Terra Madre will continue to make a difference in ways we are yet to discover. At the opening ceremony, a man wearing a traditional white hat was invited randomly from the audience to share in the ceremonial fraternity or brotherhood offering. Following others in the official party, he was invited to drink wine from a large bowl. He sipped one long sip as singers perpetuated their chorus, their ascending crescendo finally marking the conclusion of his drinking time. The music was filled with emotion and the room vibrated with the energy and anticipation emanating expectantly from the people. With the cameras fixed firmly on the man's face and the images cast up on 3 enormous screens, every delegate became united as one with him as tears welled up in his eyes, overcome by the experience. How can anyone put into words what Terra Madre meant to him?

### BOOK REVIEWS

**Dairy Sheep Nutrition. (November 2004). G. Pulina CABI Publishing, Wallingford, Oxon, UK. ISBN 0-85199-681-7 HB. 240pp. £65.00 (US \$120)**

This book is concerned with the nutritional science of dairy sheep production. This edition in English has been translated, with some updating, from the original Italian text which was published in 2001. It contains 11 chapters which average 19 pages in length. The general approach of authors is to integrate well-established nutritional information with contemporary concepts concerning the properties of milk and important factors relating to physiology of dairy sheep which are frequently compared with those for dairy

cows. The chapters are divided into subject areas concerning, (a) the chemical and physical characteristics of milk and biology of its production, (b) requirements for, and intake and role of, a range of important nutrients and (c) the application of this knowledge to practical husbandry.

The first chapter describes milk production in terms of comparative composition, physiology of mammary gland development (whole organ and cellular morphology *post partum*) and biochemistry and regulation of milk synthesis and secretion with reference also to somatic cell counts. The second chapter considers the development of mathematical models to describe patterns of milk production in dairy sheep. Comparisons are made with data for cattle and consideration is given to empirical, mechanistic, mixed function and time series analysis models to estimate lactation curves with very useful descriptions of theoretical bases underpinning the properties of each. Important variables used in the models include environment and animal-related factors.

Chapter 3 considers energy and protein requirements in the context of essentially limited experimental data for lactating sheep. A range of factors important in determining nutrient demand are considered and extensive comparisons provided for INRA (France), AFRC (UK) NRC (USA) and CSIRO (Australia) systems. These include calculations of efficiency of conversion of ME to NE and ME requirements for maintenance, milk production physical activity and pregnancy. A similar approach is taken for protein where the systems estimating amino acid supply at the small intestine (INRA, AFRC and CSIRO) are compared with the NRC system based on crude protein. The chapter describes two new feeding systems developed for sheep by the author of the chapter and colleagues.

The following chapter (4) reviews knowledge on the dietary intake of vitamins and minerals and their importance in meeting requirements for maintenance and production. Reference is made to well-established information on "micro" and "macro" mineral nutrients on the basis of concentrations in the body and physiological roles (for example: structural, catalytic and cellular signalling). Information is provided on symptoms associated with excess, deficiencies, sources and interactions. A similar treatment is given to the dietary supply of fat soluble vitamins (A, D, E, K), and importance of cobalt in the ruminal synthesis of

vitamin B<sub>12</sub>. The chapter concludes with consideration of water intake parameters for sheep. This chapter also tends to have relatively few up-to-date references and has occasional use of outdated terminology.

Information is provided in Chapter 5 on the quantification of feed intake and influences of animal factors such as body weight, physiological state, mobilisation of body tissues, health status and physical environment. A range of feed-related factors is also discussed which include chemical, physical and nutritive value, nature of pasture and the use of feed supplements. These chapters are complemented authoritatively by Chapter 6 by which covers the feeding of lactating ewes. It highlights demands of milk production, significance of milk urea concentrations, particular digestive and physiological characteristics of the ewe, and responses to different feeding systems.

Reproduction in the dairy ewe is addressed in Chapter 7 in the context of nutritional inputs affecting physiological and anatomical development, attainment of puberty, regulation of oestrus cycling and ovulation rate and subsequent pregnancy. Examples of feeding practises are provided which influence body condition score and reproductive characteristics in both ewes and rams.

Chapter 8 is devoted to the impact of nutrient supply on milk quality from the view point of provision of substrates for milk synthesis and secretion. The role of milk as a potential source of organoleptically undesirable or toxic compounds including pesticides is also considered. Particular attention is given to compositional properties of fat, total protein and total utilisable substances in the milk which is used predominantly in the making of cheese. Recommendations for applied nutrition are also made to improve milk quality and reduce presence of bacteria and somatic cells.

The ensuing chapter considers the nutrition and husbandry of lambs from provision of colostrum, natural or artificial suckling (including the use of milk replacers) and weaning. Typical feeding practice towards maturity and the negative effects of excessive nutrient supply on mammary development are also described.

The penultimate chapter concentrates on digestive disturbances and those arising from perturbation of

homeostasis for individual nutrients. Examples given include laminitis and ruminal acidosis and impairment of metabolism of calcium, magnesium, carbohydrate, fat, protein and trace elements.

The final chapter addresses theoretical and practical aspects of managing grazing and stocking systems in the Mediterranean environment. Topics include grazing behaviour of sheep and effects on nutrient supply of soil, climate, rainfall and plant species.

In conclusion, this book will provide a useful technical resource for undergraduate and postgraduate students in addition to the researchers, veterinarians and producers targeted by the publishers. It is well indexed and provides lists of acronyms and biographies of contributing authors. While the majority of references for individual chapters reflect knowledge at the time of original publication, the reader benefits from the collective expertise of the authors in the specialist subject area of dairy sheep nutrition.

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**Engineering Nutrition: GM crops for global justice? (2003) Food Ethics Council, 39-41 Surrey Street, Brighton BN1 3PB, UK. SB. 28pp. £10. Executive Director of the UK Food Ethics Council is Dr. Tom MacMillan.**

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**<http://www.foodethicscouncil.org/library/reportspdf/gmnutritionfull.pdf>.**

The Food Ethics Council (FEC) is an independent council for ethical standards in food and agriculture. In this report on GM crops and food security, they address three main issues—regulation and policy relating to GM crops, the direction of research aimed at establishing food security, and intellectual property rights and the production of ‘pro-poor’ agriculture. The report is thoroughly researched, well argued, and soundly documented.

With regard to regulation and policy the FEC argues that “although there are some substantial differences between GM crops, a general moratorium on their use in the EU is not only prudent but an ethical requirement” (4—page numbers in round brackets). The argument is based on the precautionary

principle and a critique of the risk management approach to regulation (12).

According to the precautionary principle it is better to do nothing than to do something risky. The FEC argues that doing nothing should not be given equal weight to the risks of GM crops because this would in effect negate the central point of the precautionary principle which is to create a presumption in favour of safety (12). However they do not acknowledge the difference between doing nothing in wealthy countries where there is no problem of food security and doing nothing in poor countries where there is a problem of food security. In these countries something must be done and the FEC position would be stronger if they considered the viability of non-GM alternatives to doing nothing. In addition, the FEC does not share the view of GM crop advocates that GM crops should be assessed case by case, because, they maintain, “they would each be banned on the same grounds, because of the same area of outstanding scientific uncertainty” (12). They see this as the logic of the EU moratorium on GM crops. The FEC critique of risk management consists in distinguishing the level of risk from the acceptability of risk and arguing that only the level of risk is a matter for the expert judgement of risk professionals. Decision about the acceptable level of risk is an ethical matter and requires a mechanism to determine the social acceptability of the risk.

The problem the FEC finds in the direction of research aimed at establishing food security is that it is framed too much by the biotechnology industry itself. For example, the development of Golden Rice, aimed at alleviating Vitamin A deficiency, is focused on a single (albeit important) nutritional need. But Golden Rice does not provide a general solution to ‘hidden hunger,’ the general problem of malnourishment. “Seen from this perspective, single nutrient solutions such as Golden Rice are simplistic attempts to grapple with highly complex problems” (15). Golden Rice is a flagship for the biotechnology industry. It is a development that was made possible through the techniques of biotechnology and has become a symbol of what that technology can do for the poor, whether or not it can help with the more complex problems. The technology is one that was developed in the West and is being offered to the developing world. The main difficulty that the FEC sees in this is that the Golden Rice research

programme was set up without consulting the end user. The communities affected by the problem were not consulted except at the end stage of the research. The FEC maintains this is the wrong way around and recommends that “policy approaches to alleviating hidden hunger and food insecurity involve the communities affected in defining the problem and in evaluating potential solutions” (15). Failing to involve the communities in the research planning and design, limits their involvement and choice, and may even result in rejection of the proffered “solution.” The Council recommends that instead of pushing for biotechnology “solutions” to the problem of food security, governments should invest in “research driven by the demands of the communities affected by food insecurity” (17). Box 3.3 of the Report (18) provides a useful set of methods for implementing demand-led research.

Concerning intellectual property rights and the production of ‘pro-poor’ agriculture, the report takes a fairly strong reformist position. In contrast to the current use of patent law which enables owners of GM seed to control any future use of that seed the FEC recommends that “IP protection applied to plants or animals should not allow the owner to prevent users from re-using or developing their product” (21), and that especially the rights of farmers to reuse and develop seeds should overrule the ownership of such IP. In response to the argument that ownership of IP, and the profit realized from such ownership, provides the incentive for technological progress they reply that the profit incentive should be replaced by cash rewards or prizes. The FEC further recommends that anti-trust rules be introduced and that “[b]ecause ‘intellectual property rights’ are actually intellectually-based monopoly privileges, they should be named and treated accordingly” (21).

Overall the report has a fairly strong reformist view of the genetic modification of crops. The FEC do not see GM technology as the way forward in agricultural development but, rather, as a way for industry in the developed nations to continue dominating the third world. They argue for wide ranging reforms in regulation, research policy and the law of intellectual property so as to benefit the poor of developing nations and to avoid further strengthening the domination of the transnational corporations of the developed world.

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**Applied Animal Endocrinology. 2003. E. J. Squires. CABI Publishing, Wallingford, Oxon. UK. 234pp. pb. ISBN 0-85199-594-2. £30**

Applied Animal Endocrinology is written by E. James Squires, University of Guelph in Canada, based on a course in ‘Applied Endocrinology’ taught for senior undergraduate students and graduate students for the last 15 years. The book, however, not only is intended for animal science students, but also for established animal scientists. The book no doubt will be appreciated by both groups of readers. It contains much valuable information on a lot of different aspects related to farm animal endocrinology in general and, specifically, on many different types of manipulations of the endocrine system. For all these different means of manipulation, the book shows chemical formulas of the various ‘hormonal’ compounds, describes shortly and precisely the specific mode of action, highlight possible beneficial or adverse effects on animal behaviour and health and human health. Finally it summarizes the resulting effects on feed utilization, body composition, milk yield, reproduction and product quality. Since attention is devoted to farm animal species the book distinguishes itself from the many endocrinology books focussing on human medicine. Thus, although this book is not the most comprehensive book on basic animal endocrinology, it has the advantage that it focuses specifically on processes and tissues that are relevant for farm animals.

The initial description of the overall functions of hormones and the endocrine system, hormone receptors and cell signalling gives a fine overview and illustrates the principles of the different modes of action for the various regulatory factors that are described in the later chapters. These regulatory factors are not all hormones and do not all act in an endocrine way. Thus the content is brought beyond the classical endocrine definitions. However, this

makes the book much more interesting also for geneticists, nutritionists and etiologists and one can hope that it will lead to better understanding and integration of the various disciplines across the animal science research area.

The description of the various methods, which can be used for studies and analyses in this field gives sufficient overview for the experimentalist to choose models and techniques that are sound and practical applicable in his situation. With this chapter, the author also intends to give the reader so much overview and understanding that it will help to stimulate ideas for developing new methodologies to further study and explore the fascinating nature of animal physiology.

The various manipulating compounds covered include hormones, specific nutrients, antibiotics as well as manipulations related to genotype, gene manipulation and castration. The list is not comprehensive but covers most of the methods used in animal science studies and in practical animal production. The common feature, which makes it evident to bring together these compounds and methods are their common potential of affecting animal performance, reproduction efficiency or product quality characteristics.

In connection with the applied methodology, the normal development and function of the productive (i.e., mammary development, egg formation etc.) and reproductive organs and tissues are described. However, muscle and adipose tissue development and function could have deserved a few pages to complete the picture as these tissues are important for animal production. Possible dysfunctions of the reproductive system and some metabolic diseases are covered and also stress and immune system connections are described. This is described at an appropriate level to be able to understand and integrate this knowledge.

A lot of good illustrations make the book useful as a handbook to look-up chemical formulas, metabolic pathways and overview charts of the mechanism of action of different hormones. Relevant further reading is grouped within subjects and listed at the end of each of the six chapters. The six pages of abbreviations used remind us of the need for ‘translate’ the language of this field, and in other sciences, to a common understandable language in

order to be able to communicate with people outside this ‘endocrine society’.

People working with (agricultural) politics, as food authorities, or in consumer organizations will also benefit from reading in this book. Since both advantages and disadvantages are described it gives them a good scientifically-based background on which to base their decision to be either for or against a given animal manipulating technology.

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**Minerals in animal and human nutrition. 2nd Ed. (2003) Lee Russell McDowell. Elsevier Science BV, The Netherlands. ISBN 0444513671. HB. 644pp**

Knowledge on minerals metabolism and requirements are essential prerequisites for healthy nutrition of animals and humans. All life functions and processes are associated with minerals. The four main functions of minerals are: structural, physiological, catalytic and regulatory. All of these functions are interrelated and balanced against each other and play important roles in the organized bodily processes. Deficiencies or high dose rate in minerals supply, even only in one of them, can have a severe impact on health, performance and the well-being of animals and humans.

The book gives much detailed and valuable information to all essential and non-essential macro- and microelements. The book is divided into 19 chapters. Most of them focus on one of the minerals and provide up-to-date information, evidences and references about their history, chemical properties and distribution, metabolism, physiological functions, requirements, natural sources, supplementation, deficiency and toxicity. One chapter deals with the significance of five toxic elements. The appendix tables present an overview on data of mineral composition of important feeds and minerals requirements for ruminants, horses, monogastric species and humans.

The present second edition includes many references published within the last decade and provides a large number of photographs to illustrate mineral deficiencies and toxicities. The main emphasis of the

book is on animal nutrition, physiology and feed production. The practical aspects of mineral supplementation in each chapter are of special interest for feed producers. Only a few text passages, sections, tables and photographs are oriented exclusively to problems of minerals supply in human nutrition and medicine.

The book is valuable for all people working within animal research area and for those involved in the livestock production as well. It would be most valuable to be used as a textbook for people working particularly in animal and veterinary sciences fields, for feed producers, teachers and students.

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**Animal Health and Welfare in Organic Agriculture. (2003). M. Vaarst, S. Roderick, V. Lund, W. Lockeretz. CABI Publishing, Wallingford, Oxon, OX10 8DE, UK. ISBN 0-85199-668 X £65 (US\$120). HB. 426pp. paperback**

This book is the first major text to address important health and welfare issues in organic animal agriculture in a comprehensive manner and will be of significant value to educators, researchers, extension personnel and producers attempting to meet the increasing demand for organic food. The book sets out the aims and objectives of organic agriculture and, with presentations from 48 contributors, outlines the present state of relevant knowledge, some dilemmas, and makes recommendations on the current and future application of organic principles. The emphasis is on European agriculture since the book developed as an activity of the European Network on Animal Health and Welfare in Organic Agriculture, but the information presented will be of value world-wide.

It is clear from the book that the idealism set out initially in the principles of organic agriculture has to be tempered by practical considerations. The standards adopted must aim for a balance between the desire of consumers for organic products and consid-

erations of ethical and ecological integrity on the one hand, and the practical and financial needs of producers. A case in point is the situation regarding supplemental amino acids. These are banned from organic diets on the grounds of being “synthetic”, a designation not technically correct since three of the four amino acids currently used in the conventional feed industry (lysine, threonine and tryptophan) are derived from microbial fermentation. Lack of availability of amino acids for organic feed supplementation is known to result in diets of unbalanced protein composition, inefficient protein utilization and a resultant increased N load on the environment. This effect is contrary to the aim of ecological integrity and is of considerable practical importance since organic agriculture relies exclusively on animal manure and other organic wastes as fertilizer. Another example of the need for compromise is the “no-chemicals” approach adopted in some countries which could be construed as being likely to lead to animal suffering versus the approach in others that avoidance of suffering overrules any limitations placed on the use of medication. This difference in approach highlights another aspect of the current situation, a lack of harmonization of standards world-wide.

It is clear from the book that organic production standards can be applied more easily to ruminants than non-ruminants. Main reasons are their better ability to grow and produce efficiently on forage-based feed systems, the widespread use of purebreds (which allows closed production cycles) and the better adaptation of ruminants to outdoor environments. Consequently, the major expansion is foreseen as being with these classes of animals.

Animal welfare is an important aspect of the presentations, the issues including the castration of bulls on pasture, artificial insemination, dehorning of cattle, nose-ringing of sows on pasture and debeaking of poultry. It is concluded that clearer guidelines for species-appropriate husbandry, housing, transport and slaughter of all farm animals should be included in the standards, and that objective methods need to be developed to assess whether the guidelines have been met. Another conclusion is that animal health plans should be included in the revised standards. These should emphasize the need to develop management strategies for disease prevention, with more emphasis on excluding external sources of disease. A need for

more research to support implementation of the recommendation for greater use of alternative therapies when animals must be treated was also identified.

Feeding is another important area and is dealt with in several presentations. The basic principles relating to the organic feeding of livestock, namely that the animal should be fed a diet appropriate for its species and ideally that all the animals on the organic holding should be fed a fully organic diet from the holding itself will be very difficult or impossible to achieve in areas with harsh climates and on farms with insufficient land area for crop cultivation. As yet there are no sufficiently clear criteria in the EU regulations for deciding on which feeds may be used on organic farms and several authors have called for this shortcoming to be corrected. There is currently a shortage of organic protein feedstuffs in many countries, exacerbated by the lack of supplemental amino acids, and contributing to an estimated doubling in the cost of organic layer feed (for example) compared with conventional feed.

Education and training systems targeted towards a more holistic approach to farm management are suggested in several of the chapters. The key role of veterinarians familiar with organic principles is recognized, also the very important contribution of researchers in the development and interpretation of standards at the national and international levels.

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**Recent advances of research in anti-nutritional factors in legume seeds and oilseeds. (2004). Eds: M. Muzquiz, G.D. Hill, C. Burbano, C. Cuadrado and M.M. Pedrosa. Publication No. 110 in EAAP Series. Wageningen Academic Publishers, Wageningen, The Netherlands. ISBN 9076998396. HB. 384pp. Euros 85**

The book provides the papers at the 4th International Workshop on anti-nutritional factors (ANFs) in legume seeds and oilseeds held in Toledo (Spain) in March 2004. The work is a clear and complete summary of the current research. Topics start with the analytical detection of ANFs in legume seeds

through to the mode of action when ingested and their positive and negative effect on animal and human metabolism. The opportunity of applying particular technological process or genetic engineering is also discussed for improving the feeds nutritional value.

Each session includes a review of the topic followed by scientific papers. The area of interest is not limited to the common oil seeds and it is also extended to tropical feeds that could play a key role in the European feed market. Of interest is the section dealing with relations among lectins, intestinal epithelium and microflora.

The work clearly illustrates how the approach to ANFs studies has moved from simple evaluation of the negative consequences to an understanding of the means of action at the gastro-intestinal level involving metabolic function, hormonal and immune system modulators, microflora activity regulator and pre-biotic function hypothesis.

An interesting idea is to create a databank of ANFs with negative effects on animal and human nutrition. The work focuses also on the possibility of anti-cancer actions, immunological adjuvants and cholesterol lowering effects of some ANFs.

The effort put into this book by the authors and the editors has resulted in a masterpiece useful to anyone who is interested in ANFs in food for humans and feed for animal nutrition.

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**Food Quality Management: A techno-managerial approach. (2002). P.A. Luning, W.J. Marcelis and W.M.F. Jongen, Wageningen Academic Publishers, Postbus 220 6700 AE Wageningen, Netherlands. 320 pp. PB. ISBN 9074134815 65 or US\$ 75**

Quality has become a vital distinctive feature for competition in the world market of food products. This book provides a comprehensive description of the food quality management. The authors introduce the techno-managerial approach, with aims at integrating the different disciplines to contribute to achieving superior quality. In this approach the quality issues are simultaneously perceived and analysed from a technological and managerial perspective.

In chapter two, within this philosophy, quality is not only considered as physical product quality, but also includes aspects related to production characteristics (e.g. environmentally sound, wholesome) and to the performance of the organization (e.g. minimal costs, service quality). Some of these aspects are influenced mainly by technological factors, whereas others are directly affected by management decisions. A proper understanding of technological factors influencing physical features of food products is assumed to be the basis for the techno-managerial approach. Therefore, most sections are mainly focused on products quality considered from a more technological viewpoint. The last section gives a brief overview of international, national and branch regulation, which are relevant for quality and safety of food products and production.

Chapter three focuses on translating the basic management functions planning, control, leading and organising to quality management. Two additional functions, quality improvement and quality assurance, are explained in detail. Besides the general principles of the management function leadership, attention is paid to quality behaviour and empowerment. This chapter is closed with the topic of chain management, including aspects such as customer–supplies relationship, supply chain management and partnership.

Chapter four focus on relevant technological and managerial aspects that should be considered to achieve quality in food products and process design. Firstly, general steps of the design process are outlined. Subsequently, typical technological and technical variables that influence quality in food products and process design are explained. Then the tools that can be used to support the design process are shortly described. Typical managerial topics with respect to quality design include customer-oriented design management, cross-functional design and how to manage the design process.

Chapter five, the general process of quality control and the typical aspects with respects to food production are explained. The technological tools and methods that can be used to perform quality control are described in detail, including acceptance sampling, statistical process, analysis and measuring. The latter sections are focused on the managerial aspects of quality control, including control and business performance and managing of the control process.

Furthermore, the control activities are considered from a product and resource perspective at supply, production and distribution. The last section includes a description of the current situation in the food production chain with respect to control activities.

In chapter six the quality improvement of products and processes is analysed. After a short description of the well-known improvement tools, attention is focused on working with improvement teams and on strategies of organisational change.

Chapter seven describes general principles of the common Quality Assurance systems used in agribusiness and food industry. Moreover, managerial aspects involved in applying and managing quality system are described. The sections include short history, legislative aspects and principles of Good Manufacturing Practice (GMP), Hazard Analysis Critical Control Point (HACCP), and the ISO Series. In addition specific quality assurance systems in the food chain are described. A topic closely related to QA-systems is auditing and certification, which are briefly described in the last section.

One of the most important tasks of top management is to formulate long-term goals and state strategies on how to achieve these goals. This strategic management process in terms of quality policy is described in chapter eight. The concept of quality policy is elaborated, and two central themes in food quality management are described: total quality management and strategic alliances in the food chain. In order to verify the performance of quality policy, sets of criteria have developed, and these sets are enclosed in different awards and prizes.

The last chapter is dedicated to the current dynamics of food quality. The current situation in the food market and the food production chain is very turbulent due to changing consumer requirements, increased competition, environmental issues and governmental interests. The techno-managerial approach gives, considering the dynamics, a concise picture of the core developments for the future of food quality management.

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**Animal Domestication and Behaviour (2002).  
E.O.Price. CABI Publishing, Wallingford, Oxon,  
OX10 8DE, UK. ISBN 0-85199-597-7. £49.95.  
(US\$85). HB. 297pp**

Domestication automatically leads the reader to think of domestic livestock. In that sense, the title may give a misleading initial impression of the main thrust of this book, but the author sets out his stall very clearly with the statement “This book is basically a review of the literature on the topic of domestication and rearing animals in captivity.” It is not primarily about domesticated livestock.

The expectation that a review should include extensive referral to literature is realised with more than one thousand references listed. Many of these relate to wild species, especially fish and rodents, which dominate the book, and this feature is reflected in the index, which is classified by subject and species.

The continuing link throughout is between domestication and animal behaviour, and the author again clearly directs the reader down this path – “The emphasis is on animal behaviour” – and this raises several issues that are relevant to both wild and domesticated species. Three categories are defined, namely wild, tame and domesticated. The distinction between tame and domesticated is critical to the argument, because it permits differentiation between control and selection. Capture can transform a wild species into a tame species, but selection and adaptation—both genetic and environmental—are necessary to achieve domestication.

This process raises intriguing questions. Only a few species have played a major role in domestication and the author questions whether others might be suitable. Some traditional domesticated species are utilised at the margins of their adaptability, and new species with local adaptation may offer significant benefits. Eligibility for domestication rests on well-defined qualities of gregariousness, non-aggression, promiscuity and precocity, but the author shows that other biological mechanisms could be involved. Colour is cited as an unlikely example, but supporting evidence would be provided by the lower viability of tan self-coloured Soay sheep.

The reduction of sexual dimorphism by domestication is noted, and may identify a paradox.

Efficiency of livestock production in several species is enhanced by a small production unit (female) and a large product (progeny). The latter is determined by a large male, therefore sexual dimorphism is potentially valuable.

Although many of the examples in the book are drawn from wild or captive animals, there are lessons to be learned which relate to domesticated animals. Libido in rams is enhanced when they have been used as lambs, and functional specialisation of a breed improves its interaction with humans, although the data in the latter case is suspect as the Awassi sheep appears to be classed as an unspecialised breed.

Several accepted theories are questioned. Despite the widely accepted theory of neotony, the weight of evidence shows that dogs do not retain the juvenile skull dimensions of wolf puppies. Other points have direct relevance to domesticated livestock, especially those that exist in small populations. In particular, the author points out that genetic bottlenecks do not necessarily cause loss of genetic variation. He catalogues the factors influencing inbreeding depression and the advantages of outbreeding, but he also defines the benefits of inbreeding and the problems of outbreeding depression when “co-adapted gene complexes are disturbed”. This concurs with the experience of some breeders of pedigree cattle which have tolerated high levels of inbreeding and demonstrated a low frequency of deleterious genes in the initial genome.

The final section of the book is devoted to behaviour with particular reference to feral animals and animal welfare, and the author states that “an understanding of the domestication process is important in dealing with issues related to animal welfare”. The inter-relationship of behaviour and welfare clearly has great importance for wild and captive animals, but it may also have relevance for some domesticated animals. For example, breeds which have been exposed to less artificial selection may function more efficiently in multi-sire groups, which in turn may help to maintain sexual dimorphism.

Recent developments in re-wilding – which is feralisation under another name – raise many welfare and other issues discussed here. It will be a valuable book of reference for zoological wardens and directors, and for those involved with experimental animals. It will be of less value to breeders and

keepers of domesticated livestock, but nevertheless they will find nuggets of value embedded in this many-layered review.

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**Nutrition of the Performance Horse: Which system in Europe for evaluating the nutritional requirements? (2004) Eds: V. Julliand and W. Martin-Rosset, EAAP Publication No. 1111. Published by Wageningen Academic Press, Wageningen, The Netherlands. ISBN 907699837 Euro 45. 158pp**

Different working groups have been set up under the umbrella of the Horse Commission of the European Association for Animal Production (EAAP). The working groups have conducted workshops in different European countries. “Nutrition of the Performance Horse” results from a workshop organized by ENE-SAD’s (Etablissement National Enseignement Supérieur Agronomique de Dijon) research group “UPR Nutrition des Herbivores” that focused on “Nutritional Systems for Equines.”

This book contains eye-opening research papers from workers in various European countries concerning the complexity of appropriate nutrition. Most interesting is the complexity of the various systems used to evaluate recommended allowances. If we do not understand the differences in these systems, we will be comparing apples to oranges in equine nutrition. This book aims to clarify the situation of the different nutritional systems used in Europe for a very practical purpose-to give your performance horse the correct feed.

This volume allows researchers to share their findings in a meaningful way and to build a network for research in equine nutrition. This report explores in detail the requirements for nutrition in performance horses, broken down by breeds, performance goals, age of the horse, amount of work performed and expected, as well as environmental factors. It also becomes clear from these reports that much research is needed to fill in gaps and that this is an ongoing subject of study as new research becomes available.

The book is organized into two parts: “Systems for Evaluating the Energy Requirements of Performance

Horses,” consisting of seven chapters, and “Systems Used for Evaluating the Protein Requirements of Performance Horses,” consisting of five chapters. The chapters, or research papers, contain up-to-date scientific material and most of them have a rather extensive listings of literature cited. The first chapter, “Representation of equestrian structures managers on horse nutrition” by Franck Remond, explores the need to connect scientific data to the “person in the field,” or “in the barn,” who is feeding the animals.

Research results need to reach the producers, which of course includes the feed industry as well as the person dealing with horses on a daily basis. It is clear that there is a considerable gap between the research results and the horse manager who is often not up-to-date on scientific information, but relies instead on the feed industry to make changes according to research.

This book is a great step in the right direction: to find a common language and to clarify research systems. It is a “must read” book for all horse owners and researchers interested in maximizing the potential of their equines, even if they do not have a “performance horse” per say. Much research has been done and the important part of this publication is to compare and to put under one umbrella the results of research from different perspectives and different countries. It is a fabulous resource.

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**The Encyclopaedia of Farm Animal Nutrition (2004).** Ed. M.F. Fuller. CAB International, Wallingford, Oxon, UK. HB ISBN 0-85199-369-9. pp704. £150 or US\$250

A good encyclopaedia is always, for me, a mixture of wonder and frustration. Wonder at the range and scope of the information that encyclopaedias usually contain; always a reminder of the immensity of one’s ignorance and the sparcity of one’s own knowledge. Frustration because of the inevitable brevity of subjects that catch the imagination and about which one wants to know more; (or, when the subject happens to be one that is familiar, the incomprehen-

sibility of why everything that one happens to know oneself isn’t there on the page.

This encyclopaedia of farm animal nutrition claims to be the first of its kind and whilst there are many text books that try to cover the range of subjects that are identified here I think it is true to say that this is the first setting of farm animal nutrition as an encyclopaedic listing. Its 606 pages span the range from abalone to zymogens with about 2,000 entries in between written by about 100 specialists in their field. Malcolm Fuller, the main editor, comments in the preface that as this is the first encyclopaedia of its kind to be published it must be seen as a work in evolution, not yet complete. He invites readers to submit suggestions for amendments that can be included in future editions. This statement of intent (for further editions) is, I believe, good news because a work of this kind will be a helpful addition to anyone’s library who has interests in the field of animal nutrition. And, good though this first step is, one has to say that there are improvements to be made.

It is always easier to edit/critique than to draft/initiate. And the challenge of bringing together an encyclopaedia for the first time is a truly daunting one. The editor and his various editorial helpers have done a good job at creating this first edition. But it has its flaws and I would certainly encourage anyone with interests in farm animal nutrition firstly to have a copy of this first edition for reference and secondly to take up the invitation offered by the editor to make constructive suggestions for future refinements.

The encyclopaedia contains information on quite a wide variety of different feed-stuffs. For many of these there is a table of nutrient composition, although the nature of information provided in the tables is not completely standardised. Perhaps one thing that might be considered for the future would be tables of feed compositions brought together in an Appendix that could then be cross-referenced from the text.

There is a reasonable amount of cross referencing between entries, although the structure of this could be improved. For example the entry on “deficiency diseases” has no cross-references at all—but would be an obvious place to provide a listing that cross-referenced to more detailed entries on specific diseases in the appropriate places. Similarly for “dietary fibre” and “digestion”. The overall structure

of the encyclopaedia could, I think, be improved by using entries on “central themes” as major cross-reference points to detailed information.

There are some unexpected omissions. For example there is an entry on clover silage, but not on clover. “Grass” on the other-hand merits two pages-but with remarkably little information on the composition of grass(es) except for *hypparrhenia rufa*. There is virtually no mention of rye grass despite its significant importance as a source of animal nutrition in some parts of the world.

The definition of “nutrition of farm animals” adopted as background to the encyclopaedia reaches into biochemistry, physiology, pathology, veterinary medicine, animal husbandry and agriculture and, to some extent, even beyond these subjects. This is a very broad view of nutrition and presents a big challenge to ensure encyclopaedic coverage. Some of the coverage in the areas of nutritional “physiology” is rather thin. Growth factors are mentioned, but growth hormone is not (although it is mentioned under “somatotrophin”, but without cross-reference). There is no mention of leptin—although luteinizing hormone is mentioned. Given the importance of leptin in the regulation of nutritional state an entry is merited.

There are relatively few illustrative diagrams and perhaps some thought should be given, in future editions, to using diagrams to support the text more fully. This might be the case particularly for giving information on important nutritional pathways. The TCA cycles and urea cycles are well illustrated, but perhaps there are quite a number of other places where pathway diagrams to show the metabolic actions of particular nutrients (or nutritional phenomena) could be used.

Some of the terminology is a little loose for someone with a pedantic outlook (like me!). Should “energy systems” really be “energy requirement (or feeding) systems”? There is an entry entitled “Kjeldahl” that identifies this as “a procedure used to measure total N etc”. Kjeldahl was a man not a procedure. (Though, in the author’s defence, Mr Hoover was a man, not a vacuum cleaner).

The basis of nutritional understanding depends, increasingly, on knowledge of nutrient-gene interactions. An entry on this would be appropriate to sit along side the “genotype-nutrition interactions” entry that is included.

Some information is split between entries when it might more usefully have been brought together. For example, the sections on muscle and on skeletal muscle, if combined, would give a more integrated picture of muscle structure, function and development than the current presentation.

Most of the entries that relate to feeding systems (and, to some extent, the terminology adopted for feed compositions) have a very UK orientation. For this encyclopaedia to gain wider international appeal it should look for ways to capture understanding and data on these issues with a wider international perspective.

There is no doubt that there is plenty of scope for constructive evolution from this first edition. I do hope, however, that the editor and his team will fulfil their implied commitment to future editions, building on as many constructive comments as they can receive. In saying this I would hope that you, the reader, get two clear messages. The first is that this is a book that deserves to be owned and used by those with interests in farm animal nutrition. The second is that every reader should take up the challenge of helping develop this work into future editions that could, potentially, make it a real classic for this sector of science.

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**Food safety assurance in the pre-harvest phase. Volume 1, 2002. Edited by: Frans J.M. Smulders and John D. Collins. Wageningen Academic Publishers, P.O. Box 220, 6700 AE Wageningen, The Netherlands. ISBN 9076998051 395 pp. HB. 84 or US\$ 97**

The book presents a readable overview in the subject of safety of food products of animal origin: the described safety aspects concern the pre-harvest phase. The European action plan (White Paper on Food Safety; EU legislation; HACCP system) for safe animal feed in EU is analysed to focus and underline the multidisciplinary approach needed to discuss in this subject.

Microbiological concerns were mainly considered while to natural (mycotoxins) and industrial contaminants (heavy metals, pesticides, organic pollutants) a

brief description was dedicated. Epidemiological aspects about classical zoonoses and emerging pathogenic bacteria, antibiotic resistance problems related to veterinary drug use were described and discussed. Concerning human pathogens linked with farm practices, new laboratory methodologies for the isolation and characterization of microorganisms were fully described in two sections of the volume: modern techniques in immunoassays analysis (use of recombinant antigens) were considered and compared to the classic antibody-based diagnosis; quantitative real Time-PCR was described as new PCR based technology applied with the purpose for a quantitative approach in the detection of infectious agents.

In a dedicated section of the book several aspects concerning transmissible spongiform encephalopathies (TSE) were discussed: the history of TSE and the origin of BSE were briefly described whereas surveillance strategies and European control measures adopted were deeply argued.

A very interesting section of book concerns the safety aspects of aquatic food products and seafood: chemical, biochemical and microbiological concerns were described in a exhaustive overview.

The section of the book entitled “Synopsis of other conference contributions” is compiled of several papers presented in a scientific brief communication format. The information contained in the papers covers a wide spectrum of studies: a variety of technical issues on the microbiological contamination in animal feed production, epidemiological study in different European Countries, laboratory analyses methodology are discussed.

Overall, the book provides an interesting collection of scientific contributions concerning the main aspects related to the safety of food of animal origin and represents a very useful tool for all operators employed in public health such as veterinary services, consumer protection authorities, food industry and regulatory agencies.

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**Biostatistics for Animal Science. (2004). Miroslav Kaps and William R. Lamberson CABI Publishing, CAB International, Wallingford, Oxfordshire, OX10 8DE, UK. 464 pp. SB, ISBN 0-85199-820-8, US\$ 65.00**

The book *Biostatistics for Animal Science* by Kaps and Lamberson is an excellent textbook or reference book on biometrics for graduate students or researchers in animal science. The book is easy to read and well formatted throughout with numerous easy to follow examples from various disciplines in animal science.

Generally, textbooks on biometrics are deficient in animal science examples and rely heavily upon agronomic examples; however, this book is replete with real-life animal science examples with detailed explanations. Especially helpful is the utilization of SAS© programs and outputs to elucidate and augment the principles and computations involved in each of the examples. SAS is a powerful statistical computing package that is oft used, and sometimes misused, in data analysis. This text with its philosophy of presenting the principles and theory first and foremost and then using SAS© to illustrate the application of those principles and theories is commendable. Most often, one finds texts on statistical principles and theory or texts that detail SAS statements and procedures, but rarely does one find a text that merges the two as well as *Biostatistics for Animal Science* has done.

The initial chapters lay the groundwork of the basic principles and theories of statistics and distribution theory that are the underpinnings of the correct interpretation of hypothesis testing and data analysis. The description of these principles and theories are straightforward without becoming mired in statistical jargon that can easily confuse those who are not statisticians. The chapters dedicated to regression analysis and correlation progress in an appealing and natural manner, starting with simple linear regression and ending with nonlinear regression models. The section of Problems with Regression is very informative for graduate students and researchers alike when troubleshooting experimental or field data. For graduate students and researchers with limited experience in data validation or testing for outliers,

the subsection on Extreme Observations is particularly useful. Another aspect of regression analysis not often discussed thoroughly, but that this text explains well is that of curvilinear relationships between the dependent and independent variables. This text does an outstanding job of differentiating between a curvilinear (or nonlinear) response surface and a nonlinear model, which is sometimes hard to understand for those not with a statistical background. The chapters detailing analysis of variance are comprehensive and complete. As with regression analysis, the progression for analysis of variance is logical and straightforward. The text begins with one-way analysis of variance with all of its nuances, including a random effects model, and terminates with repeated measures. In between the text systematically discusses and illustrates blocking, change-over designs, which includes a detailed discussion of Latin squares, factorials, nested designs, double blocking, split-plots, and analysis of covariance, which includes a test for heterogeneity with example. As an added bonus, the text in its final chapters covers discrete dependent variables using logit and probit models for binary and binomial variables.

In summary, *Biostatistics for Animal Science* is an excellent text and should be on every animal scientist's bookshelf.

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**Cost-Benefit Assessment in the Use of Animals in Research Animal Procedures Committee (APC), (2003). 103pp. UK Government publication, Home Office, Communications Directorate. Downloadable from** <http://www.apc.gov.uk/reference/costbenefit.pdf>

The Animal Procedures Committee (APC) is a statutory committee established by the *Animals (Scientific Procedures) Act 1986* (The Act) to advise the Secretary of State on matters concerned with The Act. Section 5(4) of The Act states that in determining whether to grant a licence for application of scientific procedures to animals the Secretary of State “shall weigh the likely adverse

effects on the animals concerned against the benefit likely to accrue as a result of the programme to be specified in the licence.” This Review discusses “the adequacy of the current cost-benefit assessment performed in the course of evaluating project licence applications” (1—page numbers in brackets refer to the Review).

### **A practical publication**

This Review should be of interest to anyone concerned with animal experiments and especially to those involved in, or thinking of becoming involved in, animal experiments. Topics covered by the Review range from the very general ethical issues to the very practical matter of applying to the Home Office (HO) for licences. Of greatest practical use are the summaries of HO guidance on licence application. There are five summaries. The first collates the questions the HO asks about the validity of the experiments (28). The next two concern the costs (in animal suffering)-the definition and scope of costs considered (37), and then the factors considered by the HO in assessing the cost (38). The fourth collates the factors considered in assessing the potential benefits of the experiment (41), and the last summarizes the advance constraints on the scientific purpose and nature of animal use permitted under The Act (55). The Review also raises questions about the adequacy of various aspects of The Act and of the HO implementation of The Act, questions based on ethical and scientific considerations.

### **Summary**

After a first short chapter introducing the Review and explaining how it came about, the second, somewhat longer, chapter explains the ethical foundations of the discussion of scientific use of animals. The third chapter addresses “The scientific validity of animal experiments”—whether they are relevant to their purposes and reliable. The fourth chapter constitutes about a third of the Review and concerns “The identification and assessment of costs and benefits,” though most of the chapter is concerned with identifying and assessing costs. This includes “social and psychological costs, such as

fear, anxiety, loss of memory, confusion, and boredom, as well as more overt physical harms” (82). Chapter five concerns the “Practical procedures for cost/benefit assessment” and chapter six presents “Summary and conclusions.”

### Need to improve Home Office documentation

One of the recurrent themes of the Review is the obscurity of Home Office (HO) documentation—both in terms of stating the conditions that must be met to receive a licence for animal experimentation and in terms of the applications that need to be made for licences. It is for this reason that the Review is very practical in its collation from various documents of the questions the HO asks, and conditions it asks to be met, in applying for a licence.

### Measure of severity inadequate

In Section 4.5.2 of chapter four the Review provides a detailed analysis of the HO method of measuring the severity of suffering and suggests two revisions of the rules. The first suggestion is that the use of severity bands to measure the suffering resulting from a project is inadequate. The severity band is the suffering of the *average* animal—so that in a large project many animals can suffer substantially even though the project as a whole falls into the mild suffering band. The other suggestion is that the middle range of suffering, moderate, is too much of a catchall and needs further refinement:

“...a new system of recording the severity of the effects actually experienced by the animals is needed, that could be used to enhance the quality and usefulness of the public information provided in the Home Office statistics and also help to indicate progress made in refining animal use year-on-year” (76).

### Need for greater openness

One reason offered for clarifying the suffering of animals is that it will provide better information to the public. An important theme that runs through the Review is the need to improve public informa-

tion about the uses of animals in scientific experiments. Indeed this was the focus of the August 2001 *Animal Procedures Committee report on openness* (<http://www.apc.gov.uk/reference/reports>).

### Conclusion

The review addresses a number of other important issues such as the duplication of animal experiments, the non-publication of negative results and the inertia of regulatory agencies in revising regulations which require animal testing. The attention to these issues as well as the ones specifically discussed above, make this an important review and a useful contribution to the cause of animal welfare.

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*Acknowledgement: This review was first published in the Magazine of Scientists for Global Responsibility, www.sgr.org.uk.*

### PUBLICATIONS OF INTEREST

**Performance recording of animals: state of the art 2004. (2005). Edited by M. Guellouz, A. Dimitriadou and C. Mosconi 2005, 432 pages, hardbound, EAAP Scientific Series no. 113. ISBN 907699854.X. Euro75 or US\$95**

This publication contains the proceedings of the 34th Biennial Session of the International Committee for Animal Recording (ICAR) and the Interbull Meeting held in Sousse, Tunisia from 28th May to 3rd June 2004.

The book is divided in five sessions, containing in total 50 technical papers and reports. One key session debates the traceability and all subjects involved in animal health recording. This publication also presents, for the first time, the statistics of the “Yearly inquiry on the situation of milk recording in ICAR member countries. Results for the years 2001 and 2002” are up-dated to April 2004. About 35 pages are devoted to national milk productions, their recording costs, position of milk recording and the results of milk

recording divided by breeds and are presented in easy to read tables.

The main topics covered in this book are:

- the latest genetic improvement techniques for the global dairy industry;
- the potential to create an international beef evaluation system;
- presentation of advancing new technical standards for identification, performance testing, as well as a discussion of global priorities for livestock management;
- new tools to improve the fertility of dairy cows.

New technologies have always been important in ICAR forums for members to understand and discuss. In this conference electronic identification and measurement, DNA recording, and internet services were debated, with an exchange of experiences by the delegates. Finally, new strategies for potential new services for the ICAR member organisations were discussed. One such proposal was for an international benchmarking service for measuring and comparing the activities of ICAR organizations.

### **Building an international legal framework on animal genetic resources: Can it help the drylands and food-insecure countries? by Ilse Köhler-Rollefson, League for Pastoral Peoples**

This paper provides arguments for an international agreement to govern the genetic resources of farm animals. How can breeds and genes be conserved, where are the biodiversity hotspots, and what should an international agreement cover? Download the full text from [http://www.pastoralpeoples.org/docs/int\\_legal\\_framework\\_an\\_gen\\_res.pdf](http://www.pastoralpeoples.org/docs/int_legal_framework_an_gen_res.pdf).

### **FAO PUBLICATIONS OF INTEREST ON ANIMAL GENETIC RESOURCES MANAGEMENT**

#### **Legislation and animal genetic resources**

The FAO Legal Office and Animal Production and Health Division jointly prepared a paper entitled “The legal framework for the management of animal genetic resources” that has just been published as Number 24 in the Background Study Paper series of the Commission on Genetic Resources for Food and

Agriculture. It reports the findings of a study of the international and national legal framework applicable to the conservation and sustainable use of farm animal genetic resources. The paper, based on responses to a questionnaire completed by 55 countries as well as additional research, describes the state of the development of relevant international law, reviews the approaches taken and problems identified in national legislation, as well as national implementation of the relevant international law. One of the international legally binding instruments it discusses is the Cartagena Protocol on Biosafety. See <ftp://ext-ftp.fao.org/ag/cgrfa/BSP/bsp24e.pdf> or contact [Daniele.Manzella@fao.org](mailto:Daniele.Manzella@fao.org) for more information.

#### **“Management of Animal Genetic Resources for Conservation, Sustainable Use and Sharing of Benefits” by Lothar Guendling, August 2003**

This new study is available online at: <http://www.gtz.de/agrobiodiv/pub/pub.htm#4>.

#### **Conservation strategies for animal genetic resources**

An FAO paper entitled “Conservation strategies for animal genetic resources”, by D.R. Notter, has just been published as Number 22 in the Background Study Paper series of the Commission on Genetic Resources for Food and Agriculture. The paper contrasts opportunities, challenges, biological characteristics, institutional infrastructure and operational considerations influencing management of plant and animal genetic resources. It also summarises main threats to livestock genetic resources and outlines areas of greatest opportunity for better management of these resources. Potential impacts of biotechnology on animal genetic resources are also considered. See <ftp://ext-ftp.fao.org/ag/cgrfa/BSP/bsp22e.pdf> or contact [dad-is@fao.org](mailto:dad-is@fao.org) for more information.

**FAO/IAEA International Symposium on Applications of Gene-based Technologies for Improving Animal Production and Health in Developing Countries Vienna, Austria, 6-10 October 2003-FINAL REPORT-extended book of synopsis etc** Is available at: [http://dad.fao.org/en/refer/library/reports/IAEA\\_Biotech\\_Symp\\_Oct2003.htm](http://dad.fao.org/en/refer/library/reports/IAEA_Biotech_Symp_Oct2003.htm).

### **Guidelines for the Constitution of National Cryopreservation Programmes**

The European Focal Point for the Management of Animal Genetic Resources in Europe produced [documents/rapport\\_april\\_2004.pdf](http://www.cgn.wur.nl/angr/documents/rapport_april_2004.pdf) —see at: [http://www.cgn.wur.nl/angr/documents/rapport\\_april\\_2004.pdf](http://www.cgn.wur.nl/angr/documents/rapport_april_2004.pdf).

### **Artificial breeding of cattle in Africa**

A manual entitled “Guidelines and recommendations for improving artificial breeding of cattle in Africa”, which “is aimed at all levels of administrative and technical personnel involved in the provision of artificial insemination services to cattle farmers in Africa” has been published on the web. This 63-page working document is an output from a technical co-operation project entitled “Improving and increasing milk and meat production”, implemented by IAEA (the International Atomic Energy Agency) and AFRA (the African Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology), with technical support of the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture. See <http://www.iaea.org/programmes/nafa/d3/public/afra-oct03.pdf> (2 MB) or [http://dad.fao.org/en/refer/library/reports/CattleBreedingAfrica\\_oct03.pdf](http://dad.fao.org/en/refer/library/reports/CattleBreedingAfrica_oct03.pdf).

### **Managing Agricultural Biodiversity for Sustainable Development**

Information on the CGIAR Workshop on which was held in Nairobi, Kenya in October 2004 is available at the following website: <http://sgrp.cgiar.org/agrobiodiversityworkshop.html>.

The website contains a draft version of the workshop outcomes, as well as the workshop discussion paper, abstracts and PowerPoint presentations.

## **OTHER RECENT PUBLICATIONS OF INTEREST FROM FAO**

### **FAO Annual Report on the State of Food and Agriculture, 2003–04**

The latest edition of the State of Food and Agriculture, one of FAO’s main publications, providing an annual report on current developments affecting world agriculture, has just been published. The report comes in 3

parts, with parts II and III dedicated to a “World and regional review: facts and figures” and a statistical annex respectively. The first part, entitled “Agricultural biotechnology: meeting the needs of the poor?”, deals with the potential for agricultural biotechnology to address the needs of the world’s poor and food-insecure. It comprises 9 chapters grouped under three main headings: framing the debate; the evidence so far; and making biotechnology work for the poor.

*See a FAO press release (in Arabic, English, French and Spanish) at <http://www.fao.org/newsroom/en/news/2004/41714/index.html>, Download the document (in Arabic, Chinese, English, French and Spanish) from [www.fao.org/documents/index.asp](http://www.fao.org/documents/index.asp) or contact [esa@fao.org](mailto:esa@fao.org) for more information.*

### **The FAO Livestock, Environment and Development (LEAD)**

The FAO Livestock, Environment and Development (LEAD) Initiative is pleased to announce the release of the LEAD Digital Library on CD-ROM. The CD-ROM contains over 130 publications in English, French and Spanish which address critical livestock, environment and development interactions. The publications are indexed according to subject areas or hotspots: Wildlife/Biodiversity, Deforestation, Involvement of mixed farming systems, pollution from Industrial Animal Production, Global environmental effects and Land degradation.

To obtain a free copy of the CD-ROM please send an email with your full name and postal address to: [LEAD@FAO.ORG](mailto:LEAD@FAO.ORG) (mailto:LEAD@FAO.ORG) If you wish to obtain more than one copy please indicate the number of copies and the intended purpose of the required CD-ROMs.

For more information about animal production, environment and development interactions, please visit the LEAD Virtual Research and Development Centre at: <http://lead.virtualcentre.org>.

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### **FAO Biotechnology Glossary translated into French**

The FAO “Glossary of biotechnology for food and agriculture”, published in 2001 as FAO Research and Technology Paper 9, has now been translated into French, entitled “Glossaire de la biotechnologie pour l’alimentation et l’agriculture”. Apart from a translation of the over 3,000 terms and definitions contained in the original English glossary, the 427-page publication also contains an additional English-French vocabulary of biotechnology-related terms. The French translation was compiled by M. Atallah, with an extensive revision by M. Tepfer and A. Eggen. The publication is available both in PDF and as a searchable database, at [http://www.fao.org/biotech/index\\_glossary.asp?lang=fr](http://www.fao.org/biotech/index_glossary.asp?lang=fr).

Alternatively, contact [Charlotte.Lietaer@fao.org](mailto:Charlotte.Lietaer@fao.org) to request a copy of the publication.

### **FAO Biotechnology Glossary-Spanish translation**

The FAO “Glossary of biotechnology for food and agriculture”, published in 2001 as FAO Research and Technology Paper 9, has now been translated into Spanish, entitled “Glosario de biotecnología para la agricultura y la alimentación”. Apart from a translation of the over 3,000 terms and definitions contained in the original English glossary, the 510-page publication also contains an additional English-Spanish vocabulary of biotechnology-related terms. The Spanish translation was carried out by the Cátedra Alfonso Martín Escudero in the Universidad Politécnica de Madrid, and coordinated by its Director, Ignacio Trueba. The translators were M.J. Fraga Fernández Cuevas, P. Rodríguez Palenzuela, E. Cabrera Ordóñez and A. Alfonso Gallegos. The publication is available, both in PDF and as a searchable database, at [http://www.fao.org/biotech/index\\_glossary.asp?lang=es](http://www.fao.org/biotech/index_glossary.asp?lang=es).

Contact [Charlotte.Lietaer@fao.org](mailto:Charlotte.Lietaer@fao.org) to request a copy.

**Foods derived from biotechnology. Codex Alimentarius Commission. Joint FAO/WHO Food Standards Programme Rome, 2004, 58 pp. ISBN 92-5-105259-X. ISSN 0259-2916. TC/M/Y5819/E. \$12.00**

The Codex Alimentarius Commission at its twenty-sixth session in 2003 adopted overarching principles on the risk analysis of foods derived from modern biotechnology and guidelines for food safety assessment of foods derived from recombinant-DNA plants or produced using recombinant-DNA micro-organisms. This compact volume contains these adopted texts to promote wide use and understanding of the risk analysis process of food derived from modern biotechnology by governments, food industries and consumers.

**Production Yearbook 2003. Vol. 57. FAO Statistics Series No. 177. Rome, 2004, 340 pp., Multilingual (En/Fr/Es/Ar/Ch). ISBN 92-5-005216-2. ISSN 0071-7118. TC/P/Y5705/Multi. \$46.00**

The FAO Production Yearbook is a compilation of statistical data on basic agricultural products for all countries and territories of the world. This yearbook includes data series on area, yield and production of crops; on livestock numbers and products; and on population, land use, irrigation and farm machinery, for the years 1999-2002. It also gives total and per caput index numbers that highlight trends in food and agricultural production across all countries and continents for the years 1992-2003. Statistical information is mainly based on data provided by countries through electronic media, questionnaires of the FAO Statistics Division or official statistics publications. In the absence of official data, FAO makes estimates based on the best information available. The data are disseminated to serve the needs of scholars, economists, policy-makers, decision-makers as well as industry professionals and those professionals in the capital markets. Please note that, with effect from 2005, the FAO Production, Trade and Fertilizer Yearbooks and the FAO Bulletin of Statistics will be replaced by an annual publication entitled FAO Statistical Yearbook.

**Agricultural marketing resources (CD-ROM). Rome, 2004, Trilingual (En/Fr/Es) ISBN 92-5-005221-9. TC/C/Y5713/Tri. \$20.00**

This CD of agricultural marketing resources brings together many of the publications on agricultural marketing published by FAO since around 1990. The

publications include training material for extension workers and for university students, books on marketing policy, guides on the planning and design of markets and books on market information and farm input marketing. The CD has been compiled primarily to assist those who do not have access to the Internet, or who have trouble in downloading large files over the Internet. [To run the CD a Microsoft® Windows based computer with Internet Explorer or Netscape browser is required. Microsoft® Word and Adobe® Reader® software are required to view some of the publications].

**Towards sustainable CBPP control programmes for Africa. FAO-OIE-AU/IBAR-IAEA. Consultative Group on Contagious Bovine Pleuropneumonia. Third meeting, Rome, 12–14 November 2003 FAO Animal Production and Health Proceedings No. 3 Rome, 2004, 212 pp. ISBN 92-5-105166-6. ISSN 1810-0732. TS/M/Y5510/E \$52.00**

The main objective of the Consultative Group on Contagious Bovine Pleuropneumonia (CBPP) is to foster collaboration among the various stakeholders on CBPP disease management and provide the technical platform for discussions and policy direction for adaptive research relating to various aspects of CBPP disease. The Third Consultative Group meeting was attended by a wide array of CBPP experts from field veterinary services, diagnostic laboratories, policy-makers, international partner institutions, research and international reference laboratories and FAO Animal Production and Health staff. This report provides an account of the technical presentations made at the meeting, summaries of discussions held, and recommendations from participants.

**Codex Alimentarius Commission. Procedural Manual. Fourteenth edition. Joint FAO/WHO Food Standards Programme. Rome, 2004, 200 pp. ISBN 92-5-105258-1 ISSN 1020-8070 TC/M/Y5817/E \$18.00**

The Procedural manual of the Codex Alimentarius Commission is intended to help Member Governments participate effectively in the work of the joint FAO/WHO Food Standards Programme. The manual is particularly useful for national delegations attending

Codex meetings and for international organizations attending as observers. It sets out the basic Rules of Procedure, procedures for the elaboration of Codex standards and related texts, general principles and guidelines for the acceptance of Codex standards by governments, basic definitions and guidelines for the operation of Codex committees. It also gives the membership of the Codex Alimentarius Commission and the addresses of Codex contact points.

**FAO/WHO Technical workshop on residues of veterinary drugs without ADI/MRL. 24–26 August 2004, Bangkok, Thailand, Rome, 2004, 174 pp. ISBN 92-5-105225-5. TC/M/Y5723/E. \$24.00**

The Technical workshop met in order to provide FAO, WHO and Codex with a first analysis of disruptions in food trade that occurred in 2001/2002. The disruptions were caused by the detection of trace amounts of chloramphenicol and nitrofurans in animal products. The experts at the workshop were asked to identify the scientific, technical and regulatory problems related to these findings and to discuss follow-up steps. This publication contains the working documents prepared prior to the meeting and the report of the workshop itself.

**Voluntary standards and certification for environmentally and socially responsible agricultural production and trade. 2004. Pascal Liu, Mikkel Andersen, Catherine Pazderka. FAO Commodities and Trade Technical Paper No. 5. Rome, 2004, 80 pp. ISBN 92-5-105240-9. ISSN 1729-9829. TC/M/Y5763/E. \$16.00**

This publication is a summary of the presentations and discussions that took place during the meeting on “Voluntary Standards and Certification for Responsible Agricultural Production and Trade” organized by FAO in April 2004. It presents the situation of the main import markets for certified products and the evolution of demand. Case studies aimed at comparing sustainable farming methods with conventional methods are presented. These comparisons focus on production cost, yield, price premium and net profit. The difficulties with which the producers are confronted are analysed and possible solutions to overcome them are explored. The publication also

discusses the roles of nongovernmental organizations, private stakeholders and other institutions involved in sustainable agriculture and explores possibilities for greater collaboration among them.

**Trypanotolerant livestock in the context of trypanosomiasis intervention Strategies By: Kwaku Agyemang. PAAT Technical and Scientific Series No. 7. Rome, 2005, 74 pp. ISBN 92-5-105262-X. ISSN 1020-7163. TC/M/Y5832/E \$12.00**

Trypanosomiasis poses a considerable constraint on livestock-agricultural development in tsetse-infested areas of sub-Saharan Africa. Many efforts to limit or eradicate trypanosomiasis have failed or have had limited success. However, in certain areas of West Africa, livestock production remains possible, despite the presence of tsetse fly, through the use of cattle and small ruminant breeds that are tolerant to the disease. This paper provides an overview of the problem and the various options for its control. Emphasis is placed on the definition of the role of trypanotolerant livestock as an integrated approach to control the disease.

**State of Food Insecurity in the World 2004. Monitoring progress towards the World Food Summit and Millennium Development Goals Rome, 2004, 40 pp. ISBN 92-5-105178-X. TC/M/Y5650/E. \$15.00**

The sixth edition of *The State of Food Insecurity in the World* reports that the number of chronically hungry people in the developing world has fallen by only 9 million since the World Food Summit baseline period of 1990–1992. The conclusion is inescapable: we must do better. Looking at the impressive progress that more than 30 countries in all developing regions have made in reducing hunger, the report highlights another clear and compelling lesson—we can do better. And for the first time, *The State of Food Insecurity in the World 2004* presents provisional estimates of the staggering costs that hunger inflicts on households and nations—the millions of lives ravaged by premature death and disability, the billions of dollars in lost productivity and earnings. On both moral and pragmatic grounds, these estimates lead to one more unavoidable conclusion—we cannot afford not to do better.

The report also includes a special feature examining the impact that the rapid growth of cities and incomes in developing countries and the globalization of the food industry have had on hunger, food security and nutrition.

*The State of Food Insecurity in the World 2004* concludes with an urgent appeal to scale up action, resources and commitment in order to achieve the World Food Summit goal. That goal of cutting the number of hungry people in half by the year 2015 can still be reached if we just focus our efforts over the next ten years on simple, low-cost, targeted actions that will improve food security quickly for very large numbers of people. Hunger cannot wait.

**The Custodians of Biodiversity Rome, 2003, 124 pp., Trilingual (En/Es/It). Hardback; 90 photographs in black and white, 30,5 cm × 24 cm. ISBN 92-5-004987-0. TC/M/Y4881/Tri. \$45.00**

Agricultural biodiversity is a precious legacy from past generations that we have a moral obligation to pass on, intact, to the next generations so that they can retain all options for dealing with the future. The magnificent photographs of Pablo Balbontín Arenas, reproduced in this book, give a better idea of genetic diversity than the lengthy texts of any encyclopaedia. They provide an insight into the life and customs of farmers who foster, maintain and use genetic diversity in traditional agricultural systems, deploying local techniques and knowledge accumulated over many centuries. Pablo has chosen four crops (wheat, rice, maize and potato) that together account for more than 50 percent of human calorie intake from plants, and has travelled to areas where each of these crops has been domesticated and developed over thousands of years, seeking out communities and settlements that are generally difficult to reach and therefore ‘uncontaminated’, in which to observe and photograph local agricultural traditions. The album includes texts by Riccardo Bocci (Istituto Agronomico per l’Oltremare): “Wheat: Ethiopia between poverty and wealth”; José Esquinas-Alcázar (FAO): “The Custodians of Biodiversity”; Christine Graves (International Potato Centre): “Potato, Treasure of the Andes”; Silvia Riberio (Grupo de Accion sobre Erosion, Tecnologia y Concentracion): “Maize, seeds of life”; and Emmanuel Yap and Sarah Wright (Farmer–

Scientist Partnership for Development): “Rice, our living heritage”.

**Compendium of food additive specifications. Addendum 12. FAO Food and Nutrition Paper No. 52 Add. 12. Rome, 2004, 140 pp. ISBN 92-5-105246-8. ISSN 0254-4725. TC/M/Y5777/E. \$24.00**

This document is one of three publications prepared by the sixty-third session of the Joint FAO/WHO Expert Committee on Food Additives (JECFA), held in Geneva, Switzerland, in June 2004, and dedicated to the evaluation of food additives. The report of the meeting will be published in the WHO Technical Report Series and the toxicological monographs in the WHO Food Additives Series. Specifications of certain food additives in this document provide information on their identity and purity. The three main objectives of these specifications are to identify the substance that has been subject to biological testing, to ensure that the substance is of the quality required for safe use in food and to reflect and encourage good manufacturing practice. This publication will be useful to all those who work with or are interested in food additives and their safe use in food.

**Family Nutrition Guide. Anne Burgess, Peter Glasauer. Rome, 2004, 124 pp., spiral bound ISBN 92-5-105233-6. TC/M/Y5740/E. \$26.00**

The Family Nutrition Guide is a practical guide that aims to improve the feeding and nutrition of families in developing countries. It is primarily written for health workers, nutritionists, agricultural extensionists or other development workers who design nutrition education materials and activities and work with people at community level. It should also be useful to mothers or other caregivers who want to know more about family feeding, as well as anyone training health staff and other community-level workers. Topics cover basic nutrition, family food security, meal planning, food hygiene and the special feeding needs of children, women and men, and old, sick and malnourished people. The nutrition facts for each topic are complemented by communication suggestions for peoples working directly with families and community group.

## TRAINING COURSES

### CIHEAM/IAMZ COURSES, MEDITERRANEAN

The following courses are offered by CIHEAM and IAMZ. Information: Instituto Agronómico Mediterraneo de Zaragoza, Apartado 202-50080 Zaragoza, Spain. Tel.: +34-976-716000. Fax: +34-976-716001. E-mail: [iamz@iamz.ciheam.org](mailto:iamz@iamz.ciheam.org) Web: <http://www.iamz.ciheam.org> Email: [iamz@iamz.ciheam.org](mailto:iamz@iamz.ciheam.org).

#### Advanced Courses And Seminars

##### Masters Courses

###### Animal Production

**Postgraduate Specialization Masters Course** will be held from 3 October 2005 to 9 June 2006 in Zaragoza, Spain.

**Agro-Food Marketing (10th Edition) International Masters Course** will be held from 3 October 2005 to 9 June 2006 and from October 2006 to July 2007 in Zaragoza, Spain.

##### Seminars

**Animal Production and Environmental Management** will be held from 2–6 May 2005 in Fonte Boa, Portugal.

**Use of Geographic Information Systems in Fisheries and Aquaculture** will be held from 13–24 June 2005 in Zaragoza, Spain.

**Sustainable Irrigated Agriculture in the Mediterranean Region: Input Management and Pollution Control** will be held from 14–25 November 2005 in Zaragoza, Spain.

**Environmental Indicators as a Tool for Sustainable Rural Management** will be held from 8–12 May 2006 at Zaragoza, Spain.

**Mediterranean Aquaculture and Environmental Management** will be held from 24–28 April 2006 in Murcia, Spain.

### WAGENINGEN AGRICULTURAL UNIVERSITY

#### Agricultural trade, the World Trade Organization and the Doha Round

An international postgraduate course will be held from 22–26 May 2005 at Wageningen University and

Research Centre in the Netherlands. The Course Leader is: Prof. Dr Alison Burrell (Wageningen University and Research Centre). Lecturers will come from academics in other universities, the EU Commission, US Department of Agriculture and other governments and NGOs. The course is intended for government officers, administrators business people, researchers, consultants and other professionals in the food system. Information: [www.wau.nl/phlo/wto.htm](http://www.wau.nl/phlo/wto.htm). Email: [info.wbs@wur.nl](mailto:info.wbs@wur.nl).

### BARNEVELD COLLEGE, THE NETHERLANDS

All courses include theory and practical aspects of management and technical operations, with study visits and are suited to beginners and mid-career specialists in production, extension and management. Information: Dept. International Studies, PO Box 64, 3770 AB Barneveld, The Netherlands. Tel.: +31-342-414881. Fax: +31-342-492813. E-mail: [io@ipcdier.hacom.nl](mailto:io@ipcdier.hacom.nl).

#### Short Courses at Barneveld College

Courses will be held at various dates through 2005 in the following topics:

- Modern Broiler Management
- Modern Hatchery Management
- Modern Breeder Management
- Modern Pig Farm Management
- Feed Formulation
- Practical Feed Production
- Combination Feed Formulation and Practical Feed Production

### CALENDAR OF SCIENTIFIC CONFERENCES

#### APRIL 2005

**British Society of Animal Science Annual Meeting** will be held in York, in April 2005. [www.bsas.org.uk](http://www.bsas.org.uk)  
Email: [bsas@ed.sac.ac.uk](mailto:bsas@ed.sac.ac.uk).

**Recent Advances in Pig and Poultry Modelling** will be held from 13–16 April 2005 at Ithala Game Reserve. Kwazulu-Natal, South Africa. [www.uksn.ac.za/poultsymp](http://www.uksn.ac.za/poultsymp).

**Assessing Rural Development Policies of the CAP. 87th Seminar of European Association of Agricultural Economists** will be held 21–23 April 2005 in Vienna, Austria. Information: [www.eaae.org/activities/indexa.htm](http://www.eaae.org/activities/indexa.htm).

#### MAY 2005

**Low Input Sheep Systems—working for love or money?** Conference will be held from 6–7 May 2005 at Greenmount College, Co. Antrim, Northern Ireland as a joint event of the British Society of Animal Science BSAS/Irish Grassland Association. Information: Email [alistair.carson@dardni.gov.uk](mailto:alistair.carson@dardni.gov.uk).

**The 8th Annual Langford Food Industry Conference on the topic of The Science of Beef Quality** sponsored by the British Society of Animal Science will be held on 18–19 May 2005 at Langford, Bristol, UK. Information: Email [Langford-E@bristol.ac.uk](mailto:Langford-E@bristol.ac.uk).

#### JUNE 2005

**56th EAAP Annual Meeting** will be held in at the Swedish University of Agricultural Sciences in Uppsala, Sweden from 5–8 June 2005. Information: [www.conference.slu.se/EAAP2005](http://www.conference.slu.se/EAAP2005).

**5th European Conference on Precision Agriculture and the 2nd European Conference on Precision Livestock Farming** will be held from 9–12 June 2005 in Uppsala, Sweden. Scientific information: Lars Thylen: [thylen@slu.se](mailto:thylen@slu.se) Conference Secretariat: [ecpa@slu.se](mailto:ecpa@slu.se) and [ecplf@slu.se](mailto:ecplf@slu.se) Tel.: +46-18-67-10-03. Fax: +46-18-67-35-30. [www-conference.slu.se/ecpa](http://www-conference.slu.se/ecpa).

**Joint Annual Meetings of the Agriculture, Food, and Human Values Society (AFHVS) and the Association for the Study of Food and Society (ASFS) will be held on the theme Visualizing Food and Farm** from 9–12 June 2005 in Oregon, USA. Information Debra Lippoldt at email: [deb@growing-gardens.org](mailto:deb@growing-gardens.org).  
<http://www.clas.ufl.edu/users/rhaynes/afhvs>.  
<http://www.nyu.edu/education/nutrition/NFSR/ASFS.htm>.

**7th International Conference on Pig Reproduction** will be held at Rolduc, The Netherlands from 12–15 June 2005. Information: Dr. P. Langendijk; email: Pieter.Langendijk@wur.nl Web: <http://www.zod.wau.nl/icpr2005/>.

**4th IDF International Mastitis Conference** will be held from 12–15 June 2005 at Maastricht, The Netherlands. Information: The Netherlands National Committee of the IDF, PO Box 165, 2700 AD Zoetermeer, The Netherlands. Tel.: +31-79-3430303. Fax: +31-79-3430326, Email: mastitisconference@nzo.nl.

**New Findings in Equine Practice.** Conference will be held from 22–23 June 2005 in Milan, Italy. Information: [www.eaap.org](http://www.eaap.org).

**XX International Grassland Congress** will be held in Dublin, Ireland from 26 June–1 July 2005. Information: Congress Secretary, Dr. Frank O'Mara, Department of Animal Science, University College Dublin, Belfield, Dublin 4, Ireland. Tel.: +353 1 716 7142. Fax: +353 1 716 1103. e-mail: [igc2005@ucd.ie](mailto:igc2005@ucd.ie) Web site <http://www.igc2005.com>.

**Pastoral Systems in Marginal Environments.** A Satellite meeting of the XX International Grassland Congress. 3–6 July 2005 in Glasgow, Scotland. Information: c.thomas@au.sac.ac.uk or j.milne@macauley.ac.uk. [www.gpia.co.uk](http://www.gpia.co.uk).

## JULY 2005

**Utilization of Grazed Grass in Temperate Animal Systems.** Cork Satellite Meeting of the XX International Grassland Congress. 3–5 July 2005. [www.igc2005.com](http://www.igc2005.com).

**30th FEBS Congress and 9th IUBMB Conference on The Protein World—Proteins and Peptides: Structure, Function and Organization** will be held from 2 to 7 July 2005, in Budapest, Hungary. Information from Secretariat: [incoming@chemoltravel.hu](mailto:incoming@chemoltravel.hu). web-site [www.febs-iubmb-2005.com](http://www.febs-iubmb-2005.com).

## AUGUST 2005

**2005 FEBS-IUBMB Congress** will be held in Budapest, Hungary from 2–7 July 2005 with the

major topic of Proteins and Peptides. Information: <http://www.febs-iubmb-2005.com> Prof. Peter Csermely, Chairman of the Organizing Committee. E-mail: [organizing.comittee@febs-iubmb-2005.com](mailto:organizing.comittee@febs-iubmb-2005.com).

**Aquaculture Europe 2005: Lessons from the past to optimize the future.** Conference will be held from 5–9 August 2005 in Trondheim, Norway. [www.easonline.org/agenda/en/description.asp?id=216](http://www.easonline.org/agenda/en/description.asp?id=216).

**Bringing Genomes to Life. ECB12: 12th European Congress on Biotechnology** will be held from 21–24 August 2005 in Copenhagen, Denmark. Information: [www.ecb12.dk](http://www.ecb12.dk). Lars Haastrup Pedersen email: [ih@bio.auc.dk](mailto:ih@bio.auc.dk).

**5th World Congress on Alternatives and Animal Use in the Life Sciences** will be held from 21–25 August 2006 in Berlin, Germany. Information: [www.ctw-congress.de/act2005](http://www.ctw-congress.de/act2005).

## SEPTEMBER 2005

**15th International Society of Organic Agriculture will hold its conference on Researching Sustainable Systems.** Organized by IFOAM, will be held from 21–23 September 2005 in Adelaide, Australia. Information: E-mail: [ifoam2005@nasaa.com.au](mailto:ifoam2005@nasaa.com.au) Website: [www.isofar.org/adelaide2005/index.html](http://www.isofar.org/adelaide2005/index.html).

**Equine Science into Business Conference** will be held at the Royal Agricultural College, Cirencester, UK from 20–21 September 2005. Information: Mike Steele at [mike.stelle@sac.ac.uk](mailto:mike.stelle@sac.ac.uk) or Andrew Hemmings [andrewhemmings@rac.ac.uk](mailto:andrewhemmings@rac.ac.uk).

**4th All Africa Conference on Animal Agriculture** with the title: “The role of biotechnology in animal agriculture to address poverty in Africa: Opportunities and challenges” will be held from 23–26 September 2005 in Arusha, Tanzania. Information: [www.eaap.org](http://www.eaap.org) + links.

**Comparative Advantages for Typical Animal Products from Mediterranean Area.** Conference will be held in Fonte Boa, Santarem, Portugal from 25–27 September 2005. Information: Estacao Zoo-

tecnica Nacional, 2005-048 Vale de santarem, Portugal. Email: director.ezn@mail.telepac.pt <http://horta.ocatch.com/medsymp/> Tel.: +351-243-767-321/5 Fax: +351-243-767-307.

## OCTOBER 2005

**2005 Animal Waste Management Symposium** will be held from 5–7 October 2005 in Raleigh, North Carolina, USA. Information: Dr. Gerald B. Havenstein, North Carolina State University, Raleigh, NC USA. Tel.: +1-919-515-5555. Fax: +1-919-513-1762. E-mail: Gerald.Havenstein@ncsu.edu. Website: [www.cals.ncsu.edu/waste\\_mgt/](http://www.cals.ncsu.edu/waste_mgt/).

**6th Global Conference of Rare Breeds International on the topic “Conservation of Animal Genetic resources—Animal breeders’ and Keepers’ Rights”** will be held from 10–14 October 2005 in Bloemfontien, South Africa. Information: [www.rbi.it/bloemfontein.htm](http://www.rbi.it/bloemfontein.htm). Dr. Antionette Kotzé email: [elsabe@idpil.agric.za](mailto:elsabe@idpil.agric.za).

## NOVEMBER 2005

**Integrating Farming Systems to meet the Challenge of Globalization** will be held in Thailand jointly between the British Society of Animal Science and the University of Khon Kaen, Thailand and the Animal Husbandry Association of Thailand. Venue: Khon Kaen, Thailand. Information: [bsas@sac.ac.uk](mailto:bsas@sac.ac.uk).

## MAY 2006

**Beef 2006 Australia’s National Beef Exposition** will be held from 1–6 May 2006 at Rockhampton, Queensland, Australia. [www.beefaustralia.org](http://www.beefaustralia.org).

**10th Symposium on Digestive Physiology in Pigs** (which is held every three years under the auspices of the European Association of Animal

Production Commission on Pig Production) will be held in Denmark in May 2006. Information: J.A. Fernández: [josea.fernandez@agrsci.dk](mailto:josea.fernandez@agrsci.dk). Web: [www.dpp2006.dk](http://www.dpp2006.dk).

## JUNE 2006

**6th Congress of the European Society for Agriculture and Food Ethics** will be held from 21–24 June 2006 in Oslo, Norway. Information: [www.eursafe.org](http://www.eursafe.org).

**Paradigms in Pig Science. A Nottingham University Conference** will be held in June 2006. Information: [julian.wiseman@nottingham.ac.uk](mailto:julian.wiseman@nottingham.ac.uk).

## AUGUST 2006

8th World Conference of Genetics applied to Animal Production (8WCGALP) **will be held from 13–19 August 2006 at Belo Horizonte, MG, Brazil. Information—Email: [secretariat@wcalp8.org.br](mailto:secretariat@wcalp8.org.br) Fax: +55-31-3494-6025. Website: [www.wcalp8.org.br](http://www.wcalp8.org.br).**

## SEPTEMBER 2006

**57th EAAP Annual Meeting** will be held from 17–20 September in Antalya, Turkey. President: Professor S. Metin Yener. Information: Saltur Tourism and Travel Agency, Tel.: +90-312-418-83-00. Fax: +90-312-425-71-37. Email: [saltur@eaap2006.gen.tr](mailto:saltur@eaap2006.gen.tr).

**2007: 58th EAAP Annual Meeting** will be held from 1–5 September 2007 in Dublin, Ireland.

**2008: 59th EAAP Annual Meeting** will be held in Lithuania.

**2009 or 2010: EAAP Annual Meeting** will be held in Greece. Dr. Otto Hartmann, Austria.