Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching

Janice C. Swanson, PhD
John J. McGlone, PhD
Co-Chairs
2nd Revised Edition
History

• First Edition 1988
• Second Edition (first revision) 1999
• Third Edition 2010
• Prior to the first edition, there was a lab animal guide, but no farm animal guide
History

- Farm animals at universities, government labs and some pharmaceutical companies had only the lab animal guide – which was not suited to farm animals
History

• On-farm guides were not available in 1988

• Some farm animal guides were developed using the FASS Ag Guide as a starting point

• There is no logical reason for requirements to differ on farms and in labs
History

2010 Ag Guide

• 62 authors – all specialists in their species or areas

• Science-based animal care
### Subcommittee Chairs

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<tr>
<th>Topic</th>
<th>Subcommittee Chairs</th>
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<tr>
<td>Institutional Policies</td>
<td>Steven Ford, PhD</td>
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<tr>
<td>General Guidelines Husbandry &amp; Facilities</td>
<td>Frank Mitloehner, PhD</td>
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<tr>
<td>Agricultural Animal Health</td>
<td>Wendy Underwood, DVM</td>
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<td>Transportation &amp; Handling</td>
<td>Temple Grandin, PhD</td>
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<td>Environmental Enrichment</td>
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GUIDE For the Care and Use of Agricultural Animals in Agricultural Research and Teaching

Federation of Animal Science Societies
First Revised Edition
January 1999
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Revision

2nd Revised Edition
• **New Chapters**
  – Transportation and Handling
  – Environmental Enrichment

• **Deleted Chapter 4 & 11**
  – Physical Plant – combined with chapter 2
  – Veal Calf Husbandry

• **New information**
  – Genetically engineered and cloned livestock and poultry
Modern Technologies

• Addition of text concerning transgenic/genetically engineered and cloned animals
Floor Space Requirements for Groups of Growing Pigs

<table>
<thead>
<tr>
<th>Pig Wt, lb</th>
<th>Ag Guide, FASS 2010*</th>
<th>SCH, NPB 2003</th>
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<tr>
<td>30</td>
<td>2.0</td>
<td>2.5</td>
</tr>
<tr>
<td>100</td>
<td>4.6</td>
<td>5</td>
</tr>
<tr>
<td>280</td>
<td>9.1</td>
<td>8</td>
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* From the general formula: area = 0.033 BW^{0.67}
Floor Space Requirements for Transport of Growing Pigs

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<tbody>
<tr>
<td>250</td>
<td>5.0</td>
<td>4.26</td>
</tr>
<tr>
<td>300</td>
<td>6.0</td>
<td>4.79</td>
</tr>
<tr>
<td>400</td>
<td>7.0</td>
<td>6.39</td>
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</table>

* Gives more space in summer than winter to transported pigs
To download a free copy of the entire Ag Guide or any chapter:

http://www.fass.org/page.asp?pageID=216
Chapter 1: Institutional Policies
Steven Ford, University of Wyoming

- James Swearengen, AAALAC, Intl
- Don Lay, USDA-ARS
- W. Ronald Butler, Cornell University
- Frank Bartol, Auburn University
Chapter 1: Institutional Policies

• Provide more clarity to issues regarding
  – Client-owned or animals not owned by the institution

• Eliminate wording that cause points of confusion or overly prescribe

• Updated reference sources describing current practices and procedures
Chapter 2: General Guidelines for Animal Husbandry and Facilities
Frank Mitloehner, UC-Davis

• Jim Swearegen, AAALAC, Intl
• Curt Gooch, Cornell University
• Pius Mwangi Ndewga, Washington State University
• Larry Jacobson, University of Minnesota
Chapter 2: General Guideline for Animal Husbandry and Facilities

- New title
  - Chapters 2 and 4 of 1st revised edition combined and re-titled
  - Facilities is inclusive of housing
Revisions: Chapters 2 & 4...

- Section on environmental enrichment was omitted from the new Chapter 2
  - Reason: to avoid duplication with new chapter on environmental enrichment.

- Section “Temperature, water vapor pressure, and ventilation” has been moved after section on “Macroenvironment and microenvironment”
Revisions: Chapter 2 & 4 …

- A section on bio-security was added

- Additionally, revision suggestions that were brought forward by the public (e.g., Humane Society) were fully considered and largely implemented.

- Literature and references updated
Chapter 3: Agricultural Animal Health Care
Wendy Underwood, Eli Lilly

- Michael Bailey, Cornell University
- S. Peter Cuneo, University of Arizona
- Steven Berry, U-C Davis
- Gail Golab, AVMA
Chapter 3: Agricultural Animal Health Care

• Large portions of Ch 2 combined with Ch 3
  – Husbandry
  – Standard Agricultural Practices,
  – Emergency care
  – Restraint and transportation
Revisions: Chapter 3: Ag Animal Health Care …

• Ch 3 reorganized
  – Procurement, acclimation, quarantine
  – Husbandry
  – Veterinary Care
  – Surgery
  – Euthanasia and Slaughter
Revisions: Chapter 3: Ag Animal Health Care  …

• Procurement, acclimation and quarantine
  – AV should develop Guidelines
  – Exemptions from SOP must be justified and approved by IACUC
  – Exemptions to quarantine process approved by AV
Revisions: Chapter 3: Ag Animal Health Care  …

• Husbandry
  – Personnel qualifications must be documented
  – Disaster plan must be developed
  – Requirements for feed storage enhanced

• Info on animal identification expanded
Revisions: Chapter 3: Ag Animal Health Care

- **Veterinary Care**
  - The AV is responsible for the Health Care Program
  - AV authority to oversee all aspects of research animal care
  - Defines AV roles and responsibilities
  - Enhanced definition of adequate health care
  - Animal care personnel must be trained to recognize signs of disease, illness and pain.
  - Section on Medical Records was greatly expanded.
Revisions: Chapter 3: Ag Animal Health Care  

• Surgery
  – The AV should advice use of anesthetics/analgesics
  – Guidance on use of tranquilizers
  – Emphasis on husbandry/facilities for recovery
  – Surgical training program MUST be approved by IACUC
  – Requirements for post surgical care defined.
  – Discussion of severe/chronic pain enhanced
Revisions: Chapter 3: Ag Animal Health Care

• Residue Avoidance
  – Record keeping requirements defined
  – Requirement for implementation of Quality Assurance Programs emphasized.
  – Definition of Extra Label Use clarified.

• Recommendations for use/storage of Hazardous chemicals enhanced.
Revisions: Chapter 3: Ag Animal Health Care ...

• Restraint
  – Addition that personnel using hydraulically operated restraint equipment be properly trained.

• Transgenics
  – Entirely new section
  – Definition of transgenic and genetically modified animals
  – CLEARY STATES THAT: “The scientist is responsible for identifying physiologic and/or phenotypic changes and must have a plan to address changes that affect animal health to facilitate and ensure animal welfare.”
Revisions: Chapter 3: Ag Animal Health Care  …

• Euthanasia and Slaughter
  – Personnel must have training and experience
  – Emphasis on captive bolt training and maintenance of equipment
  – Emphasis on confirmation of death.
  – Discussion of use of electrocution
  – Emphasis on ensuring adequacy of ‘stunning’ for euthanasia of farm animals intended for food supply
Chapter 5: Guidelines for Beef Cattle Husbandry
Terry Mader, University of Nebraska

• Allen Trenkle, Iowa State University
• James Oltjen, UC-Davis
• Tami Brown – Brandl, USDA-ARS
• Larry Hollis, Kansas State University
• John Arthington, University of Florida
Chapter 5: Guidelines for Beef Cattle.

- Followed similar section format and updated information and references.
- Provided an assessment of ideal and adverse thermal conditions associated with beef cattle production.
- Outline thermal indices which could be useful for characterizing environmental stress in beef cattle.
Revisions: Chapter 5: Beef Cattle…

• Added section: genetically modified and cloned beef cattle
• Added section: identification methods and implanting
• Updated sections on dehorning and castration
• Section on transport and handling removed to new chapter on this subject
Chapter 6: Guidelines for Dairy Cattle Husbandry
Pamela Ruegg, University of Wisconsin

- Bill Bickert, Michigan State University
- Randy Shaver, University of Wisconsin
- Nigel Cook, University of Wisconsin
- Susan Eicher, USDA-ARS
- Paul Fricke, University of Wisconsin
- Sheila McGuirk, University of Wisconsin
- Doug Reinemmann, University of Wisconsin
Chapter 6: Guidelines for Dairy Cattle…

• Similar format with updates and additions
  – Tables and references

• Significant enhancement to the following sections:
  – Tail docking statement
  – Noise and music
  – Milking machine and udder sanitation procedures
Revisions: Chapter 6: Dairy Cattle…

– Foot care section
  • More science based recommendations
  • Evaluation criteria
  • Hoof care recommendations
– Social Environment
  • More detailed information with respect to preventing aversive social situations
– Ventilation
– More detailed information of calf care (with deletion of the veal calf chapter)
Chapter 7: Guidelines for Horse Husbandry
Carolyn Stull, UC Davis

• Anne Rodiek, Calif. State University- Fresno
• Bob Coleman, University of Kentucky
• Sarah Ralston, Rutgers University
• Don Topliff, West Texas A&M University
• Suzanne Millman, Iowa State University
• Followed original section outline
• Environment and Facilities section
  – New! Manage high-traffic areas
    • Mud/wetness during wet periods
  – No changes to dimensions and size of accommodations
Revisions: Chapter 7: Horses....

- Feed and Water refocused
  - Provide feed and water in a manner that accommodates natural behavior
    - Assists in alleviating digestive maladies (Colic, laminitis and obesity)
  - Principles of digestion at several life stages described

- Social environment focus on behavior in confinement housing
Revisions: Chapter 7: Horses….

- Husbandry: sections on exercise, grooming, hoof care, and health
  - Vaccination, parasite control, teeth floating, and foaling (new)
- Restraints section enhanced
  - How and when to use restraint
- New sections
  - Identification
  - Recognizing signs of acute and chronic pain and distress
Revisions: Chapter 7: Horses....

- Euthanasia section more information regarding:
  - Training of personnel
  - Appropriate methods
  - Methods for emergencies
  - Vital signs to confirm death
Chapter 8: Guidelines for Poultry Husbandry
Patricia Hester, Purdue University

• Inma Estevez, Ph.D., University of Maryland
• Ken Koelkebeck, Ph.D., University of Illinois
• Carl Mike Turk, M.S., Maple Leaf Farms, IN
• Bruce Webster, Ph.D., University of Georgia
• Sally Noll, Ph.D., University of Minnesota
• Ken Anderson, Ph.D., North Carolina State U.
• Robert Porter, Ph.D., DVM, University of Minnesota
Chapter 8: Guidelines for Poultry...

- All sections updated and expanded
- Section on alternative housing enhanced
  - Furnished cages
  - Aviaries
  - Outdoor or free range access
- Feed restriction on broiler breeders
  - Noz bonz use
Revision: Chapter 8: Poultry…

• New sections
  – Perches
  – Nests
  – Semen collection and insemination

• Standard agricultural practices: added sections
  – Snood removal
  – Wattle removal
  – Pinioning
  – Non-feed removal molting
Revision: Chapter 8: Poultry…

• Euthanasia and Slaughter: expanded
  – Use of gas
• Special considerations: added
  – Genetically modified birds
  – Intra-thoracic and intra-abdominal surgeries-caponization
• Number of tables increased to make them more user friendly
  – Existing tables updated and separated
    • One table each for feed, water and space allowances for each species of poultry
Chapter 9: Guidelines for Sheep and Goat Husbandry
Greg Lewis, USDA-ARS

• William Gavin, GTC Biotherapeutics
• Arthur Geotsch, Langston University
• Paul Kuber, The Ohio State University
• J. Bret Taylor, USDA-ARS
• Michael Thonney, Cornell University
Chapter 9: Guidelines for Sheep and Goats

- Sheep & goats may have similar management
  - Different genus and species
  - Behavior, foraging, diet selection, metabolic requirements, growth, physiology differ
  - Training and experience of caretakers consistent with requirements of each species
Revisions: Chapter 9: Sheep & Goats…

- Management and care may be site specific
- Feed and water recommendations update with NRC recommendations (2007)
- Parasite control revised reflect newly emerged issue of internal parasite resistance to anthelmintics
- Shearing recommendations revised
  - Lambing (benefit) and the reduction of lateral disease transmission during shearing
Revisions: Chapter 9: Sheep & Goats…

• Definitive guidelines on docking lamb tails and length of docked tail

• New sections:
  – Social environment
  – Dairy sheep and goats
  – Zoonotic disease
  – Lairage and harvest
  – Biosecurity
  – Transgenics and cloning
Chapter 10: Guidelines for Swine Husbandry
Janeen Salak-Johnson, University of Illinois

- Joe Cassady, North Carolina State U.
- Matt Wheeler, University of Illinois
- Anne Butters-Johnson, Iowa State University
Chapter 10: Guidelines for Swine..

- Major revision
  - Housing systems

- New sections addressing
  - Microclimate
  - Biomedical research
Revisions: Chapter 10: Guidelines for Swine...

- Facilities and Environment section expanded
  - Microenvironment
    - Thermal needs and ventilation
    - Lighting – photoperiods effects
- Husbandry section re-organized and enhanced
  - Nursery systems
  - Growing finishing systems
    - Space allowances - indoor engineering/ outdoor performance based
  - Breeding and gestation systems
    - Individual and group housing
Revisions: Chapter 10: Guidelines for Swine...

- Handling and Transport section enhanced
  - Caretaker training and attitude sections
  - Sections addressing alley ways, load out, flooring, chute angles, lighting,
  - Transportation
  - Non-ambulatory pigs

- New section: Special Considerations
  - Housing of swine on biomedical protocols in agricultural facilities
    - Discussion of ILAR Guide and FASS Guide
New Chapters
Environmental Enrichment
Joy Mench, U-C Davis

- Ruth Newberry, Washington State University
- Suzanne Millman, Iowa State University
- Cassandra Tucker, U-C Davis
- Larry Katz, Rutgers University
New Chapter: Environmental Enrichment

• Definition of enrichment: enhancement of animal’s social or physical environment that improves the animal’s biological functioning

• Goals of enrichment
  – Increasing number and range of normal behaviors
  – Reducing abnormal behaviors
  – Increasing positive utilization of environment
  – Increasing animal’s ability to cope with behavioral and physiological challenges
Environmental Enrichment…

• Suggestions for enrichment: all species
  – Socialization to humans
  – Occupational enrichment
  – Physical enrichment
  – Sensory enrichment
  – Nutritional enrichment

• General considerations
  – Outcome assessment
  – Training observers to assess outcomes
  – Practical considerations (animal health and safety)
  – Need for collaboration and consultation
Transportation and Handling
Temple Grandin, Colorado State University

• Joseph Stookey, University of Saskatchewan
• Mhairi Sutherland, Texas Tech University
• Bruce Webster, University of Georgia
• Carolyn Stull, U-C Davis
• Jeffrey Hill, PhD
New Chapter: Transportation and Handling

- Covers all species
  - More extensive coverage of topic
- Principles of animal handling
  - Behaviors and flight zones
  - New addition: moving aids
  - Animal perception – visual distractions
- Facility design, equipment
  - Maintenance and sanitation
New Chapter: Transportation and Handling…

• General principles of animal restraint
  – Emphasis on preventing agitation and excitement
• Handling of non-ambulatory animals
• Transportation
  – Updated tables on space allowance and thermal requirements
  – Vehicular recommendations
• Lairage prior to slaughter
• Emergency procedures
Chapter 4: Physical Plant
Chapter 11: Guidelines for Veal Calf Husbandry

• Chapters eliminated
  – Chapter 4 combined with 2
  – Chapter 11
    • calf care is addressed in the dairy and beef cattle husbandry chapters
Timeline

• Subcommittee completes review June 2008
• Presentation to FASS societies and other professional and scientific groups
• Receive and address comments
• Final document January 2009
  – Downloadable pdf on FASS website
Thank You

Questions