

Journal of Dairy Science®: Instructions to Authors¹

Editorial Policies and Procedures

The American Dairy Science Association® (ADSA®) invites scientists from the global community to submit papers for consideration to the *Journal of Dairy Science*. Authors need not be members of ADSA.

These instructions detail the form and style required by the *Journal of Dairy Science* (JDS) for papers submitted for publication. Papers that do not follow the form and style of the journal may be rejected without review. It is recommended that authors refer to these instructions when preparing manuscripts, when incorporating requested changes into revisions after review, and when checking author proofs.

Contact Information for Journal Staff

For information on the scientific content of the journal, contact the editor-in-chief, Dr. Gary W. Rogers, Geno Global Ltd., 2153 Buck Hollow Rd., New Market, TN 37820; phone: 865-471-1566 or 865-680-4208; e-mail: grogers200@yahoo.com.

For assistance with Manuscript Central, Manuscript Submission/Copyright forms, and page charge/offprint orders contact Jeremy Holzner, Editorial Assistant, Headquarters Office, 2441 Village Green Place, Champaign, IL 61822; phone (217) 356-2426 ext. 38; FAX (217) 378-4083; jeremyh@assoqh.org.

For other information or to submit a paper, contact Susan Pollock, Managing Editor, Headquarters Office, American Dairy Science Association, 2441 Village Green Place, Champaign, IL 61822; phone (217) 356-7641; FAX (217) 378-4083; journals@assoqh.org.

Care and Use of Animals

All research animals should be acquired, retained, and used in compliance with federal, state, and local laws and regulations. The authors should state explicitly that IACUC (or equivalent) approval was obtained before commencement of the study. Authors should make it clear that experiments were conducted in a manner that avoided unnecessary discomfort to the animals by the use of proper management and laboratory techniques. Experiments should be conducted in accordance with the principles and specific guide-

lines presented in *Guidelines for the Care and Use of Agricultural Animals in Agricultural Research and Teaching* (available from Federation of Animal Science Societies, 2441 Village Green Place, Champaign, IL 61822). Methods of killing experimental animals must be described in the text. When describing surgical procedures, the type and dosage of the anesthetic agent must be specified.

Types of Articles

Full-Length Research Papers. The majority of papers published in JDS are full-length research articles. The journal emphasizes the importance of good scientific writing and clarity in presentation of the concepts, methods, and sufficient background information that would be required for thorough understanding by scientists in other disciplines. The results of experiments published in the journal must be replicated, either by replicating treatments within experiments or by repeating experiments.

In addition to full-length research papers, the following types of articles appear in the journal:

Our Industry Today. The Our Industry Today section includes interpretive applied summaries and recommendations from research that are useful to the dairy industry. Syntheses and applications from technical reports that contribute to solutions of problems in the dairy industry especially are solicited. Authors of reports for extension education of the nonscientist are encouraged to share their contributions with colleagues and to achieve larger circulation of their conclusions and recommendations through this section. In addition, papers that report on advances in teaching and outreach techniques are suitable for this section. The organization of papers for Our Industry Today may vary but should be logical and effective; an abstract is required. All other style and form instructions apply.

Hot Topics. Papers submitted for this section must report on a completed experiment testing a timely, original hypothesis of importance to an area of dairy science. The work may be preliminary in nature, but with sufficient data so that the hypothesis is clearly tested. Results may point to avenues for fruitful, in-depth analyses. Reports must contain an explicitly stated hypothesis and objectives, with sufficient detail in methodology for repetition of the work, as well as a results section, a brief discussion, and references. Total page limits for text, tables, figures, and references

¹Revised February 2009.

must be no more than 4 journal pages (approximately 10 typewritten pages minus space for tables and figures). The manuscript should contain a title and short abstract but not separate sections. The total number of tables and figures should be no more than 3; references should be minimal. The first page must have HOT TOPICS in capital letters on the header line.

These papers will be given priority for publication. An effort will be made to notify authors of a decision within 1 mo of the date of receipt. Once accepted, the paper should be published within 3 mo.

Short Communications. Short communications are reports of limited experiments that test a timely, original hypothesis of importance to some area of dairy science. The manuscript, which should be no more than 4 journal pages in length (approximately 10 typewritten pages minus space for tables and figures), should contain a title and short abstract but not separate sections. "Short communication:" should precede the title on the title page of the manuscript. The manuscript may report negative results. Reports must contain a hypothesis, objectives, sufficient detail in methodology for repetition of the work, results with brief discussion, and references.

Technical Notes. Papers in this section should report a method that is useful to some aspect of dairy science. Submissions should include a brief justification for the technique, be it new or an improvement on a previously published technique. The report should state a hypothesis, include a full description of procedures that can be repeated by researchers, and include explicit controls to indicate sensitivity, precision, and accuracy of the technique.

If the technique is an improvement on an existing technique, sufficient comparison of the previous technique should be included, and mean and dispersion information must be included. The page limit is 4 printed pages (approximately 10 typewritten pages minus space for tables and figures). Use of tables, figures, and references should be minimized. The manuscript should contain a title and short abstract but not separate sections. Requests for longer Technical Notes may be made to the senior editor and editor-in-chief, but justification for a longer report will be required.

Nucleic Acid Sequences. The section on nucleic acids sequences is suitable for data that are not appropriate for a full paper but that are useful to other scientists. The section is not intended for data that will be published in full elsewhere, nor is the section a repository for nucleic acid sequence information; the reported sequence must address basic questions of structural or functional interest. Authors should be aware that publication of sequences or description of molecular clones places them in the public sector. Sequences

published must relate to dairy cattle, dairy products, or dairy pathogens and microorganisms. Manuscripts dealing with comparative analyses of sequences may be considered if the genes are relevant to dairy science. Sequences of cDNA or genes for which gene products are not relevant to dairy science are not acceptable. All DNA sequences should be accompanied by a statement indicating that both strands have been sequenced with appropriate overlapping sequence runs. Sequences should be presented at a maximum of 100 characters per line.

Acceptance for publication of sequencing data is contingent on the submission to one of the databases (e.g., GenBank, EMBL Data Library). Accession number and name and address of the database should be stated in a footnote to the article title. Sequence data are peer-reviewed, but publication is rapid.

The format for publication of nucleic acids sequences is name of sequence, species in which the sequence was determined, origin of the clone, evidence that a protein is produced from the DNA, sequencing method (both strands must be sequenced with appropriate overlapping sequence runs), submission number (or accession number) to EMBL data bank (or GenBank), comments, and references. Sequences not accompanied by an EMBL Data Library (GenBank) accession number will be returned to the authors.

Invited Reviews. The mechanism for consideration of invited reviews is to encourage additional publication (~10 to 12 per year) of invited reviews in all sections of the journal. Section editors will advise the editor-in-chief on suggested reviewers and justification for the review. The editor-in-chief will make the invitation and the invited reviews editor will ensure the quality of the review. The first 10 printed pages of an invited review are published at no cost to the author.

Authors of symposium papers and invited papers presented at the joint annual meeting of ADSA/American Society of Animal Science may be selected to contribute invited review papers.

Letters to the Editor. Short (300 words) letters to the editor on topics of concern to readers, including comment on publications with rebuttals from authors if needed, may be submitted to the editor-in-chief or to any of the editors. The letters should be titled, and the title and running head should include "Letter to the editor." Letters will be published at the discretion of the editor-in-chief. Authors of letters are subject to the same copyright release requirements as other authors. Letters are published at no charge to the author(s).

Biographical Sketches. Occasionally, retiring or past scientists and educators should be subjects of biographical essays, both as a small honor to them and as an example and history for other readers. This

section brings a sense of maturity and completeness to our field. Individuals who wish to submit biographical sketches should contact the editor-in-chief or one of the editors for additional instructions.

SUBMISSION OF MANUSCRIPTS

Authors should submit their papers online at Manuscript Central (<http://mc.manuscriptcentral.com/jds>). Detailed instructions for submitting electronically are provided online (<http://mc.manuscriptcentral.com/jds>). Authors who are unable to submit online should mail one copy of the manuscript and a disk with all manuscript materials (text, figures, and tables; preferably saved as a Microsoft Word file) to Jeremy Holzner, Editorial Assistant, American Dairy Science Association, 2441 Village Green Place, Champaign, IL 61822. Staff at ADSA headquarters will post manuscripts by proxy, but authors who submit by mail should be aware that delays might occur in the review process.

Copyright Agreement

Data (including graphs, figures, tables, and illustrations) must not have appeared in print elsewhere except as abstracts, local or regional field day reports, extension letters, or non-peer-reviewed, noncopyrighted proceedings of conferences. Material submitted to JDS should not be submitted for publication to popular magazines, company advertisements, or organizational proceedings until the author has received notification of acceptance of the manuscript. Before manuscripts are submitted, authors should have them read critically by others well versed in English to facilitate review, and the senior author should have authorization to publish. All coauthors should approve the manuscript before its submission to the journal.

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is acceptable) to the managing editor, Susan Pollock, Headquarters Office, American Dairy Science Association, 2441 Village Green Place, Champaign, IL 61822; telephone (217) 356-7641; FAX (217) 378-4083; susanp@assochoq.org. Permission to reproduce whole articles can be requested online at <http://www.copyright.com>.

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REVIEW OF MANUSCRIPTS

Upon submission to JDS, a manuscript is assigned to an editor, who enlists reviewers to assist in the evaluation of the manuscript. The review process is confidential, which infers a bond of trust among the authors, editor, and reviewers. The editor is trustee of the manuscript until the review process is completed and ensures that the review process is fair, thorough, and confidential. Reviewers are asked not to share the contents of the manuscript with anyone, except that they may ask a colleague to assist with the review with approval of the editor. Communication with authors should only be through the editor. Reviewers should notify the editor of conflicts of interest that may compromise their ability to provide a fair and unbiased review. Moreover, they must recognize their responsibility in maintaining the confidential nature of the review. Authors should suggest names of appropriate reviewers when submitting the manuscript to streamline the review process and may list reviewers whom they consider unacceptable because of potential bias. These recommendations will be considered by the editor when assigning reviewers. Authors should read the statement on publication ethics, *Journal of Dairy Science* 68:3124.

A reviewed paper returned to authors for revision must be returned to the editor within 6 wk. If not, the

paper may be treated as a new submission. Under unusual circumstances, editors may extend the revision deadline beyond 6 wk.

PRODUCTION OF PROOFS

Accepted manuscripts are forwarded by the section editors to the editorial office for technical editing and typesetting. At this point the technical editor may contact the authors for missing information or figure revisions. The manuscript is then typeset, figures reproduced, and author proofs prepared.

Proofs

Author proofs will be sent by e-mail (in PDF format) to the corresponding author. Although the proof appears in a 2-column page format, it should be considered a galley proof; page layout may change when the article is paginated into an issue. Author proofs should be read carefully and checked against the typed manuscript, because responsibility for proofreading lies with the authors. Corrections may be returned by fax, mail, or e-mail. The Comments feature in Adobe Acrobat may be used to insert changes and comments within the proof PDF. For faxed or mailed corrections, changes to the proof should be made neatly and clearly in the margins of the proof. If extensive editing is required, corrections should be provided on a separate sheet of paper with a symbol indicating location on the proof. Changes sent by e-mail to the technical editor must indicate page, column, and line numbers for each correction to be made on the proof. Author queries should be answered on the galley proofs; failure to do so may delay publication.

Proof corrections should be made and returned to the technical editor within 3 days of receipt. Publication cannot proceed until proofs are returned. Contact a technical editor at journals@assoqh.org if you have questions about the proof correction process.

Publication Costs

The *Journal of Dairy Science* now offers two options for publication of articles: Conventional and Open Access.

Conventional: The current charge for publication is \$85 per printed page (or fraction thereof) in the journal for articles if at least one author is a professional member of ADSA. If no authors are ADSA members, the publication charge is \$140 per journal page. The cost to publish a color figure is \$995 (per figure) plus an offprint surcharge. There is charge for all offprints. An offprint order form will be sent to the correspond-

ing author with the author proof. Conventional pages become freely available to the public via the internet 12 months after publication in a journal issue.

Open Access: For authors who wish to publish manuscripts under Open Access, an open access fee of \$1,000 is required in addition to the page charges outlined above. Open access articles will become freely available to the public via the journal's web site at the time the journal issue containing the open access article is posted by HighWire Press. Open access articles will be freely accessible through HighWire, but author(s) submitting open access articles shall bear sole responsibility for meeting specific posting requirements of their funders. The *Journal of Dairy Science* shall provide the corresponding author with a PDF of the open access article at the time payment is received.

By signing the Manuscript Submission and Copyright Release Form at the time of submission, the authors agree to bear responsibility for payment of publication charges. Invoices for publication charges will be issued at the time an issue goes to press (approximately 2 weeks before being posted online). Payment is due within 30 days of receipt of the invoice. The preferred method of payment is by credit card, with credit card details submitted on the page charge form sent out with the author's proof. Payment may be made by check, drawn on a US bank. For payments by wire transfer, contact Vicki Paden at vickip@assoqh.org. **Manuscripts will be withheld from publication for authors with past-due page charge invoice(s) until all prior payment obligations have been met.**

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Authors who must use personal funds to pay for page charges and for whom such charges would entail hardship can request of the editor-in-chief that these charges be waived, under the following conditions: 1) the request must be made in writing **at the time the manuscript is submitted**; 2) the request should be accompanied by a statement from a financial officer or other official from the institution with which the author is affiliated, indicating the reasons why page charges cannot be paid; and 3) if the waiver is granted, the author is expected to become a professional member of ADSA. Only one waiver will be granted per institution per twelve-month period. Authors who request waivers cannot order offprints.

Offprints may be ordered at an additional charge. Offprints will be shipped approximately 1 month after publication of the issue. Invoices for offprints will be sent to the author or institution shown on the page

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MANUSCRIPT PREPARATION: STYLE AND FORM

General

Papers must be written in English. The text and all supporting materials must use American spelling and usage as given in *Merriam-Webster's Collegiate Dictionary, 11th ed.*, *Webster's Third International Dictionary*, or the *Oxford American English Dictionary*. Authors should follow the style and form recommended in *Scientific Style and Format. The CSE Manual for Authors, Editors, and Publishers*, 7th ed., published by the Council of Science Editors in cooperation with The Rockefeller University Press.

Authors should prepare their manuscripts in Microsoft Word and upload them using the fewest files possible to facilitate the review and editing processes.

Preparing the Manuscript File

Manuscripts should be typed double-spaced (in Microsoft Word) with lines and pages numbered consecutively, using Times New Roman font at 12 points. Special characters (e.g., Greek, math, symbols) should be inserted using the symbols palette available in this font. Complex math should be entered using Math-Type from Design Science (www.dessci.com). Note that equations created using the new Equation Builder in Microsoft Word 2007 may not be compatible with earlier versions of Word or other software used in our composition system. Tables and figures should be placed in separate sections at the end of the manuscript (not placed within the text). Failure to follow these instructions may result in immediate rejection of the manuscript.

Interpretive Summary

All authors of JDS papers should provide an interpretive summary (IS) of 100 words or less that has been written for nonspecialist readers. That summary should consist of a short title, the first author's last name, and a summary, which must include a sentence or two to summarize the project's expected importance, or its economic, environmental, and/or social impact (similar to the CRIS Progress Report Statement for those who must complete that form). Common abbreviations are permitted (those from the JDS Unrestricted list). The summary should appear on top of the first page of the manuscript, before the running head and title. Interpretive summaries will be peer reviewed. At publication,

interpretive summaries will appear in a section at the beginning of the journal. The summaries are intended for an audience who may not be familiar with work in the author's area of expertise and for government or media researchers, and they will provide JDS readers with a brief overview of the research presented in each issue. Authors must make the summary readable by the general public. The goal is to make JDS research more visible to a wider audience and to emphasize its impact.

Headings

Major Headings. Major headings are centered (except ABSTRACT), all capitals, boldface, and consist of ABSTRACT, INTRODUCTION, MATERIALS AND METHODS, RESULTS, DISCUSSION (or RESULTS AND DISCUSSION), CONCLUSIONS (optional), APPENDIX (optional), and REFERENCES.

First Subheadings. First subheadings are placed on a separate line, begin at the left margin, the first letter of all important words is capitalized, and the headings are boldface and italic. The heading is not followed by punctuation. Text that follows a first subheading should be in a new paragraph.

Second Subheadings. Second subheadings begin the first line of a paragraph. They are indented, boldface, italic, and followed by a period. The first letter of each important word should be capitalized. The text follows immediately after the final period of the subheading.

Title Page

Across the top of the title page (first page), indicate a running head (abbreviated title) of 45 characters or less. The running head is centered and all uppercase. Our Industry Today, Hot Topics, and Nucleic Acids Sequences serve as the running heads for those respective article types. Short Communications, Technical Notes, Invited Reviews, and Letters to the Editor use a running head beginning with the appropriate designation (i.e., SHORT COMMUNICATION:) followed by a short title.

The title should be in boldface; the first letter of the article title and proper names are capitalized and the remainder of the title is lowercase. The title should contain words or phrases used for indexing the article.

Under the title, names of authors should be typed upper and lowercase (e.g., T. E. Smith) and in boldface. Institutional addresses are displayed below the author names; footnotes referring from author names to displayed addresses should be symbols in the following order: *, †, ‡, §, #, ||, and ¶. The full name, mailing ad-

dress, phone number, fax number, and e-mail address of the corresponding author should appear directly below the affiliation lines on the title page. The corresponding author will be identified by a numbered footnote and e-mail address below the accepted line on the first page of the published article (e.g., ¹Corresponding author: my.name@university.edu). Note that there is no period following the corresponding author's e-mail address. Supplementary address information may be given in footnotes to the first page; use numerals for these footnotes. Acronyms (except USDA) for affiliations are discouraged unless the acronym is the official name. State or provincial postal code abbreviation is not included between city and zip code if the state or province is previously mentioned in the address (see example). Acceptable format is shown below:

J. E. Smith,* R. A. Jones,† and A. T. Peters‡

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†Department of Dairy Science, University of Wisconsin, Madison 53706

‡Department of Animal Science, Utah State University, Logan 84321

Abstract. Abstracts should be limited to 2,500 key-strokes. The abstract should review important objectives, materials, results, conclusions, and applications as concisely as possible. The abstract disseminates scientific information through abstracting journals and is a convenience for readers. Open the abstract with objectives and make the abstract intelligible without reference to the manuscript. Use complete sentences and standard terms. Limit the use of abbreviations in the Abstract. Refer to the list on the inside front cover of JDS for those terms that should be defined in the abstract. If a term is used less than 3 times in the abstract, it should be spelled out at each use.

Minimize the amount of data in the abstract and exclude statements of statistical probability (e.g., $P < 0.05$). Exclude references to other work because the abstracts will appear online and in indexing services without the reference list.

Key Words. After the abstract, list 2 to 4 key words or phrases; these will be used to create the subject index of JDS. In most instances, these key words should be taken from the title; they should be typed in lowercase letters, and separated by commas. Key words should be singular (e.g., “dairy cow” not “dairy cows”).

Abbreviation Key

An abbreviation key will no longer appear in JDS articles. Author-derived abbreviations should be defined at first use in the abstract and again in the body of the manuscript. The abbreviation will be shown in bold

type at first use in the body of the manuscript. Refer to the Miscellaneous Usage Notes for more information on abbreviations.

Body of the Paper

The body of the paper should contain an introduction to the problem (questions, objectives, reasons for research, and related literature); materials, methods, experimental design, and procedures; and results, discussion, conclusions, and applications.

Results and discussion may be combined into a single section. If not, the results section should not contain discussion of previously published work. Results and references to tables and figures already described in the results section should not be repeated in the discussion section.

Appendix

A technical appendix, if desired, shall follow the References section. The appendix may contain supplementary material, explanations, and elaborations that are not essential to other major sections but are helpful to the reader. Novel computer programs or mathematical computations would be appropriate. The appendix will not be a repository for raw data.

References

List only pertinent references. No more than 3 references should be needed to support a specific concept. Research papers and reviews should cite a reasonable number of references. Abstracts and articles from non-peer-reviewed magazines and proceedings should be cited sparingly. Citation of abstracts published more than 3 yr ago is strongly discouraged.

Citations in Text. In the body of the manuscript, refer to authors as follows: Smith and Jones (1992) or Smith and Jones (1990, 1992). If the sentence structure requires that the authors' names be included in parentheses, the proper format is (Smith and Jones, 1982; Jones, 1988a,b; Jones et al., 1993) with citations listed chronologically and then alphabetically within a year. Where there are more than 2 authors of one article, the first author's name is followed by the abbreviation et al. Work that has not been accepted for publication shall be listed in the text as: “J. E. Jones (institution, city, and state, personal communication).” The author's own unpublished work should be listed in the text as “(J. Smith, unpublished data).” Personal communications and unpublished data (including papers under review) must not be included in the references section.

References Section. To be listed in the references section, papers must be published or accepted for pub-

Table 1. Effect of garlic oil, diallyl disulfide, allyl mercaptan, monensin, and lovastatin on a 17-h in vitro batch culture rumen microbial fermentation trial

| Item | Treatment ¹ | | | | | | SEM ² |
|---|------------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|------------------|
| | Control | GAR300 | DAD300 | ALM300 | MON | LOV | |
| pH | 6.6 | 6.7 | 6.7 | 6.6 | 6.6 | 6.6 | 0.01 |
| Apparent disappearance of DM, % | 61.0 ^a | 50.7 ^b | 51.2 ^b | 60.4 ^a | 53.9 ^b | 62.4 ^a | 1.11 |
| Fiber digestibility | | | | | | | |
| NDF, % | 56.8 ^a | 44.3 ^b | 41.4 ^b | 55.9 ^a | 39.3 ^b | 60.0 ^a | 1.73 |
| ADF, % | 53.7 ^a | 36.8 ^b | 34.9 ^b | 52.5 ^a | 30.7 ^b | 57.0 ^a | 2.03 |
| Gas, μmol | 4,674.8 ^a | 3,756.9 ^{cd} | 3,359.7 ^d | 4,388.2 ^{ab} | 4,009.6 ^{bc} | 4,673.1 ^a | 123.34 |
| CH ₄ , μmol | 417.3 ^a | 110.1 ^d | 131.3 ^d | 335.9 ^b | 241.7 ^c | 396.3 ^a | 21.56 |
| Total VFA, mM | 49.3 ^a | 39.7 ^c | 38.8 ^c | 45.4 ^b | 45.7 ^{ab} | 48.4 ^{ab} | 1.17 |
| Individual, mol/100 mol | | | | | | | |
| Acetate | 61.2 ^a | 54.3 ^d | 53.9 ^d | 58.3 ^b | 56.4 ^c | 61.1 ^a | 0.53 |
| Propionate | 22.6 ^d | 25.8 ^c | 28.3 ^b | 22.8 ^d | 34.2 ^a | 22.8 ^d | 0.78 |
| Butyrate | 12.5 ^c | 16.5 ^a | 14.0 ^{bc} | 15.0 ^{ab} | 6.6 ^d | 12.4 ^c | 0.60 |
| Branched-chain VFA | 2.0 ^a | 1.7 ^b | 1.7 ^b | 2.0 ^a | 1.4 ^c | 2.0 ^a | 0.10 |
| C2:C3 | 2.7 ^a | 2.1 ^b | 1.9 ^c | 2.5 ^a | 1.6 ^d | 2.7 ^a | 0.07 |
| CH ₄ (μmol):VFA (μmol) | 0.20 ^a | 0.05 ^d | 0.07 ^{cd} | 0.15 ^{ab} | 0.10 ^{bcd} | 0.17 ^{ab} | 0.00 |
| N-NH ₃ , mg/100 mL | 16.7 ^{ab} | 16.6 ^{bc} | 19.0 ^a | 17.2 ^{ab} | 14.4 ^c | 16.4 ^{bc} | 1.10 |

^{a-d}Means within a row with different superscripts differ ($P < 0.05$).

¹Treatments: GAR300 = 300 mg/L *Allium sativa* (garlic oil); DAD300 = 300 mg/L diallyl disulfide; ALM300 = 300 mg/L allyl mercaptan; MON = 12.5 mg/L monensin; LOV = 5 mg/L lovastatin.

²SEM = standard error of the mean.

lication. Manuscripts submitted for publication can be cited as “personal communication” or “unpublished data” in the text. In the references section, references shall first be listed alphabetically by author(s) last name(s), and then chronologically. The year of publication follows the authors’ names. As with text citations, two or more publications by the same author or set of authors in the same year shall be differentiated by adding lowercase letters after the date. The dates for papers with the same first author that would be abbreviated in the text as et al., even though the second and subsequent authors differ, shall also be differentiated by letters. All authors’ names must appear in the reference section. Journals shall be abbreviated according to the conventional ISO abbreviations used by PubMed (<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=journals>). One-word titles are spelled out. Inclusive page numbers must be provided. Sample references are given below.

Journals

- Lane, M. A., R. L. Baldwin, and B. W. Jesse. 1995. Sheep rumen metabolic development in response to different dietary treatments. *J. Dairy Sci.* 78(Suppl. 1):310. (Abstr.)
- Tyrrell, H. F., and P. W. Moe. 1975. Effect of intake on digestive efficiency. *J. Dairy Sci.* 58:1151–1163.
- Huntington, G. B., D. L. Harmon, N. B. Kristensen, K. C. Hanson, and J. W. Spears. 2006. Effects of a slow-release urea source on absorption of ammonia and endogenous production of urea by cattle. *Anim. Feed Sci. Technol.* doi:10.1016/j.anifeeds.2006.01.012

Books

- AOAC. 1990. Official Methods of Analysis. Vol. I (or Vol. II). 15th ed. Association of Official Analytical Chemists, Arlington, VA.
- Goering, H. K., and P. J. Van Soest. 1970. Forage Fiber Analyses (Apparatus, Reagents, Procedures, and Some Applications). Agric. Handbook No. 379. ARS-USDA, Washington, DC.
- Lengemann, F. W., R. A. Wentworth, and C. L. Comar. 1974. Physiological and biochemical aspects of the accumulation of contaminant radionuclides in milk. Pages 159–170 in *Lactation: A Comprehensive Treatise. Nutrition and Biochemistry of Milk/Maintenance*. Vol. 3. B. L. Larson and V. R. Smith, ed. Academic Press, London, UK.
- National Research Council. 1989. Nutrient Requirements of Dairy Cattle. 6th rev. ed. Natl. Acad. Sci., Washington, DC.

Conferences

- Barbano, D. M. 1996. Mozzarella cheese yield: Factors to consider. Page 29 in *Proc. Wisconsin Cheese Makers Mtg. Ctr. Dairy Res., Univ. Wisconsin, Madison*.
- National Mastitis Council. 1995. Summary of peer-reviewed publications on efficacy of premilking and postmilking teat disinfections published since 1980. Pages 82–92 in *Natl. Mastitis Council. Reg. Mtg. Proc., Harrisburg, PA. Natl. Mastitis Council, Inc., Madison, WI*.

Other

- Biernoth, G., and W. Merk, inventors. 1985. Fractionation of milk fat using a liquified gas or a gas in the supercritical state. Unilever NV-PLC, assignee. US Pat. No. 4,504,503.
- Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching. 1988. Consortium, Association Headquarters, 1111 N. Dunlap Avenue, Savoy, IL 61874.
- Interbull. 2005. Genetic evaluation. Direct longevity. <http://www.interbull.slu.se/longevity/framesida-long.htm> Accessed Dec. 20, 2005.

Kelly, M. G. 1977. Genetic parameters of growth in purebred and crossbred dairy cattle. MS Thesis. North Carolina State Univ., Raleigh.

Department of Agriculture, Plant and Animal Health Inspection Service. 2004. Blood and tissue collection at slaughtering and rendering establishments, final rule. 9CFR part 71. Fed. Regist. 69:10137–10151.

Tables

The use of tables should be minimized. When used, tables should be self-explanatory and may be the most effective way to organize extensive data. Refer to *Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers* for more information on effective use of tables. Table 1 may be used as an example.

Tables must be prepared using the table feature in Microsoft Word; tables prepared in other programs (e.g., Excel) or by using spaces, tabs, and hard returns will not convert accurately and errors can result. When possible, tables should be organized to fit across the page without running broadside. Be aware of the dimensions of the printed page when planning tables (use of more than 15 columns will create layout problems).

Place table number and title on the same line above the table (as shown in sample table). The table title does not require an ending period.

Do not use vertical lines and use few horizontal lines. Bold and italic typefaces should not be used in tables. When it is necessary to do so, such use must be defined in a footnote. Limit the data field to the minimum needed for meaningful comparison within the accuracy of the methods.

For each table, spell out the first use of abbreviations in parentheses or in numbered footnotes. Abbreviations should conform to journal style and be consistent with those used in the text. Avoid reference to other tables, figures, or text.

Footnotes to tables should be numerals. Each footnote should begin a new line (see sample table). For differences among means within a row or column, superscript letters should be used as appropriate sequentially (e.g., a, ab, b, c, cd) consistently from largest to smallest means. Probability may be indicated: † $P < 0.10$, * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Figures

To facilitate review, figures should be placed at the end of the manuscript (separated by section breaks). Each figure should be placed on a separate page, and identified by the last name of the first author and figure number. Figure captions should be typed (double spaced) on a separate page. Current detailed informa-

tion (summarized below) on figure preparation can be found at <http://jds.fass.org/misc/ifora.shtml>

- **Figure size.** Prepare figures at final size for publication. Figures should be prepared to fit one column (8.9 cm wide), 2 columns (14 cm wide), or full-page width (19 cm wide).

- **Font size.** Ensure that all type within the figure and axis labels are readable at final publication size. A minimum type size of 8 points (after reduction) should be used.

- **Fonts.** Use Helvetica, Times New Roman, and the symbols palette within those fonts only.

- **Line weight.** For line graphs, use a minimum stroke weight of 1 point for all lines. If multiple lines are to be distinguished, use solid, long-dash, short-dash, and dotted lines. Avoid the use of gray or shaded lines, as these will not reproduce well. Lines with different symbols for the data points may also be used to distinguish curves.

- **Axis labels.** Each axis should have a description and a unit. Units may be separated from the descriptor by a comma or parentheses, and should be consistent within a manuscript.

- **Shading and fill patterns.** For bar charts, use different fill patterns if needed; e.g., black, white, gray, diagonal stripes. Avoid the use of multiple shades of gray, as they will not be easily distinguishable in print. Remove unnecessary backgrounds and gridlines from graphs.

- **Symbols.** Identify curves and data points using the following symbols only: □, ■, ○, ●, ▲, ▼, △, ▽, ★, ☆, ◇, ◆, +, or ×. Symbols should be defined in the figure caption or in a key on the figure (but not both).

- **File formats.** Figures can be submitted in Word, PDF, EPS, TIFF, and JPEG formats.

- **Grayscale figures.** If figures are to be reproduced in grayscale (black and white), submit in grayscale. Often color will mask contrast problems that are apparent only when the figure is reproduced in grayscale.

- **Color figures.** If figures are to appear in color in the print journal, files must be submitted in CMYK color (not RGB).

- **Resolution.** Minimum resolution is 300 dpi for grayscale and color figures, and 600 dpi for line art.

- **Photomicrographs.** Photomicrographs must have their unmagnified size designated, either in the caption or with a scale bar on the figure. Reduction for publication can make a magnification power designation (e.g., 100×) inappropriate.

- **Captions.** The caption should provide sufficient information that the figure can be understood without excessive reference to the text. All author-derived abbreviations and symbols used in the figure should be defined in the caption.

• **General tips.** Avoid the use of three-dimensional bar charts, unless essential to the presentation of the data. Use the simplest shading scheme possible to present the data clearly. Ensure that data, symbols, axis labels, lines, and key are clear and easily readable at final publication size.

Color Charge. The use of color in figures should be avoided unless it is essential to understanding the figure. The cost to publish each color figure is \$995; a surcharge for offprints will also be assessed. Authors must indicate in writing that they are willing to pay the additional cost of color reproduction; complete the Color Charge Agreement (<http://jds.fass.org/misc/ifora.shtml>) and fax to JDS Headquarters. Authors may ask for supplementary color figures to be published online only at no additional charge (see below); contact journal headquarters (journals@assoqh.org) for details.

Online-Only Data Supplements. Authors are now able to present material online that cannot physically be displayed in the print journal (e.g., Excel files, video), or that might be cost-prohibitive (e.g., color figures or extra tables), or that is too detailed for publication in the print issue. A note will appear in the print version that more material can be found online. A small charge may be levied for preparing data supplements; contact journal headquarters (journals@assoqh.org) for more information. Material posted online only must go through the review process, and consequently should be in an application or format easily accessible by most reviewers and readers.

Statistical Analysis

Biology should be emphasized, but the use of incorrect or inadequate statistical methods to analyze and interpret biological data is not acceptable. Consultation with a statistician is recommended. Statistical methods commonly used in the animal sciences need not be described in detail, but adequate references should be provided. The statistical model, classes, blocks, and experimental unit must be designated. Any restrictions used in estimating parameters should be defined. Reference to a statistical package without reporting the sources of variation (classes) and other salient features of the analysis, such as covariance or orthogonal contrasts, is not sufficient. A statement of the results of statistical analysis should justify the interpretations and conclusions. When possible, results of similar experiments should be pooled statistically. Do not report a number of similar experiments separately.

The experimental unit is the smallest unit to which an individual treatment is imposed. For group-fed animals, the group of animals in the pen or the paddock is the experimental unit; therefore, groups must be repli-

cated. Repeated chemical analyses of the same sample usually do not constitute independent experimental units. Measurements on the same experimental unit over time also are not independent and must not be considered as independent experimental units. For analysis of time effects, use time-sequence analysis.

Usual assumptions are that errors in the statistical models are normally and independently distributed with constant variance. Most standard methods are robust to deviations from these assumptions, but occasionally data transformations or other techniques are helpful. Most statistical procedures are based on the assumption that experimental units have been assigned to treatments at random. If animals are stratified by ancestry or weight or if some other initial measurement should be accounted for, the model should include a blocking factor, or the initial measurement should be included as a covariate.

A parameter [mean (μ), variance (σ^2)], which defines or describes a population, is estimated by a statistic (\bar{x} , s^2). The term *parameter* is not appropriate to describe a variable, observation, trait, characteristic, or measurement taken in an experiment.

Standard designs are adequately described by name and size (e.g., “a randomized complete block design with 6 treatments in 5 blocks”). For a factorial set of treatments, an adequate description might be as follows: “Tryptophan at 0.05 or 0.10% of the diet and niacin at 5, 10, or 20 mg/kg of diet were used in a 2 × 3 factorial arrangement in 5 randomized complete blocks, each block consisting of littermates.” Note that a factorial arrangement is not a design; the term “design” refers to the method of grouping experimental units into homogeneous groups or blocks (i.e., the way in which the randomization is restricted).

Standard deviation refers to the variability in a sample or a population. The standard error (calculated from error variance) is the estimated sampling error of a statistic such as the sample mean. When a standard deviation or standard error is given, the number of degrees of freedom on which it rests should be specified. When any statistical value (as mean or difference of 2 means) is mentioned, its standard error or confidence limit should be given. The fact that differences are not “statistically significant” is no reason for omitting standard errors. They are of value when results from several experiments are combined in the future. They also are useful to the reader as measures of efficiency of experimental techniques. A value attached by “±” to a number implies that the second value is its standard error (not its standard deviation). Adequate reporting may require only 1) the number of observations, 2) arithmetic treatment means, and 3) an estimate of experimental error. The pooled standard error of the

mean is the preferred estimate of experimental error. Standard errors need not be presented separately for each mean unless the means are based on different numbers of observations or the heterogeneity of the error variance is to be emphasized. Presenting individual standard errors clutters the presentation and can mislead readers.

For more complex experiments, tables of subclass means and tables of analyses of variance or covariance may be included. When the analysis of variance contains several error terms, such as in split-plot and repeated measures designs, the text should indicate clearly which mean square was used for the denominator of each F statistic. Unbalanced factorial data can present special problems. Accordingly, it is well to state how the computing was done and how the parameters were estimated. Approximations should be accompanied by cautions concerning possible biases.

Contrasts (preferably orthogonal) are used to answer specific questions for which the experiment was designed; they should form the basis for comparing treatment means. Nonorthogonal contrasts may be evaluated by Bonferroni t statistics. The exact contrasts tested should be described for the reader. Multiple-range tests are not appropriate when treatments are orthogonally arranged. Fixed-range, pairwise, multiple comparison tests should be used only to compare means of treatments that are unstructured or not related. Adjusted, or so-called least squares, means should not be used unless the design is unbalanced or contains missing values or an adjustment is being made for a covariate. In factorial treatment arrangements, means for main effects should be presented when important interactions are not present. Means for individual treatment combinations also should be provided in table or text so that future researchers may combine data from several experiments to detect important interactions. An interaction may not be detected in a given experiment because of a limitation in the number of observations.

The terms *significant* and *highly significant* traditionally have been reserved for $P < 0.05$ and $P < 0.01$, respectively; however, reporting the P -value is preferred to the use of these terms. For example, use ". . . there was a difference ($P < 0.05$) between control and treated samples" rather than ". . . there was a significant ($P < 0.05$) difference between control and treated samples." When available, the observed significance level (e.g., $P = 0.027$) should be presented rather than merely $P < 0.05$ or $P < 0.01$, thereby allowing the reader to decide what to reject. Other probability (alpha) levels may be discussed if properly qualified so that the reader is not misled. Do not report P -values to more than 3 places after the decimal. Regardless of the probability level used, failure to reject a hypothesis should be based on

the relative consequences of Type I and II errors. A "nonsignificant" relationship should not be interpreted to suggest the absence of a relationship. An inadequate number of experimental units or insufficient control of variation limits the power to detect relationships. Avoid the ambiguous use of $P > 0.05$ to declare nonsignificance, such as indicating that a difference is not significant at $P > 0.05$ and subsequently declaring another difference significant (or a tendency) at $P < 0.09$. In addition, readers may incorrectly interpret the use of $P > 0.05$ as the probability of a beta error, not an alpha error.

Present only meaningful digits. A practical rule is to round values so that the change caused by rounding is less than one-tenth of the standard error. Such rounding increases the variance of the reported value by less than 1%, so that less than 1% of the relevant information contained in the data is sacrificed. In most cases, 2 or 3 significant digits (not decimal places) are sufficient.

Sensory Data

Sensory data should comply with the "Statement of Policy in the Report of the Committee on Sensory Data to the Journal Management Committee of the American Dairy Science Association, 1986," *Journal of Dairy Science* 69:298.

Computer Software

Computer software should conform to the "Report of ADSA Subcommittee on Standards for Publications with Reference to Computer Software," *Journal of Dairy Science* 70:209–210.

Nomenclature

Microorganisms. All microorganisms must be named by genus and species. The name of the genus must appear in full the first time that the microorganism is cited in the abstract, in the body of the paper, and in each table and figure legend. Thereafter, the genus can be abbreviated by its first initial unless it will be confused with other microorganisms cited in the paper, in which case each genus should be abbreviated to use enough letters to avoid confusion (e.g., *Strep.* vs. *Staph.*). The names of all microorganisms should be in italics. Specific strain designations and numbers should be used when appropriate. Authorities are not required.

For microorganisms that are genetic variants of a parent strain, the genotypic and phenotypic properties should be cited according to the procedures described

by Demerec et al. (1966) in *Genetics* 54:61–76. Phenotypes should be identified by 3 letters; the first is capitalized. Genotypes should be identified by 3 lower-case italic letters. Superscript plus (+) signs are used to refer to a wild-type. The serial isolation number is placed after the locus symbol for mutations. The delta symbol is used to indicate deletions. Nomenclature for bacterial plasmids should be cited according to Novick et al. (1976) in *Bacteriological Reviews* 40:168–189.

Enzymes. Mention of an enzyme should include the EC number.

***In Vitro* Antimicrobial Susceptibility Tests**

Please refer to the JDS policy in Appendix 2 of this document.

Miscellaneous Usage Notes

Abbreviations. Abbreviations should not be used in the title, key words, or to begin sentences, except when they are widely known throughout science (e.g., DNA, RNA) or are terms better known by their abbreviation (e.g., IgG, CD). Abbreviations may be used in heads within the paper if they have been first defined within the text. The inside back cover of every issue of the journal lists abbreviations that can be used without definition. The list is subject to revision at any time, so authors should always consult the most recent issue of the journal (or the updated list at <http://jds.fass.org/misc/ifora.shtml>) for relevant information. Abbreviations are allowed when they help the flow of the manuscript; however, excessive use of abbreviations can confuse the reader. The suitability of abbreviations will be evaluated by the reviewers and editors during the review process and by the technical editor during editing. As a rule, author-derived abbreviations should be in all capital letters. Terms used less than 3 times after first use must be spelled out in full rather than abbreviated. Do not use abbreviations that replace single words, or single-letter abbreviations that could be confused with chemical elements (e.g., P, C, S). All terms are to be spelled out in full with the abbreviation following in bold type in parentheses the first time they are mentioned in the main body of the text. Abbreviations shall be used consistently thereafter, rather than the full term.

The abstract, text, each table, and each figure must be understood independently of each other. Therefore, abbreviations shall be defined within each of these units of the manuscript.

Plural abbreviations do not require “s.” Chemical symbols and 1-letter and 3-letter abbreviations for amino acids do not need definition. Units of measure, except those in the standard JDS abbreviation list,

should be abbreviated as listed in the *CRC Handbook for Chemistry and Physics* (CRC Press, 2000 Corporate Blvd., Boca Raton, FL 33431) and do not need to be defined.

International Words and Phrases. Non-English words in common usage (defined in recent editions of standard dictionaries) will not appear in italics (e.g., *in vitro*, *in vivo*, *ad libitum*, *in situ*, *a priori*). However, genus and species of plants, animals, or bacteria and viruses should be italicized. Authors must indicate accent marks and other diacriticals on international names and institutions. German nouns shall begin with capital letters.

Capitalization. Breed and variety names are to be capitalized (e.g., Holstein, Danish Red). Trademarked or registered names should be capitalized, but no TM or [®] symbols should be used. Proper nouns should be capitalized.

Numbers and Units. The *Journal of Dairy Science* uses the Council of Science Editors' number style given in the seventh edition of *Scientific Style and Format*.

Numbers less than 1 shall be written with preceding zeros (e.g., 0.75). All numbers shall be written as digits; a comma separator must be used in numbers greater than 999. Measures must be in the metric (SI) system; however, US equivalents may be given in parentheses. Units of measure not preceded by numbers must be written out rather than abbreviated (e.g., lysine content was measured in milligrams per kilogram of diet) unless used parenthetically. Measures of variation must be defined in the Abstract and in the body of the paper at first use.

General Usage. Note that “and/or” is not permitted; choose the more appropriate meaning or use “x or y or both.”

Use the slant line only when it means “per” with numbered units of measure or “divided by” in equations. Use only one slant line in a given expression: e.g., g/d per cow. The slant line may not be used to indicate ratios or mixtures.

Use “to” instead of a hyphen to indicate a range of values.

Insert spaces around all signs (except slant lines) of operation (=, −, +, ×, >, or <) when these signs occur between 2 items.

Items in a series should be separated by commas: e.g., a, b, and c.

Restrict the use of “while” and “since” to meanings related to time. Appropriate substitutes include “and,” “but,” or “whereas” for “while” and “because” or “although” for “since.”

Commercial Products. The use of names of commercial products should be minimized. When a

commercial product is being tested as part of the experiment, the manufacturer and location (or web site address) should be given parenthetically at first mention in text, tables, and figures, but, when possible, the generic name should be used thereafter. Trademark symbols and registration marks should not be used and will be removed.

Avoid describing a method as “per manufacturer’s instructions.” If the product goes out of production, the method will be lost to readers. Many products come with literature references; try to use references that can be found by other researchers to describe a method being used.

Supplemental Information

The following information is available online and updated regularly. Please refer to these pages when preparing a manuscript for submission.

Journal Title Abbreviations. A list of standard abbreviations for common journal titles and words used in citations is available in Appendix 3.

SI Units. The following site (National Institute of Standards and Technology) provides a comprehensive guide to SI units and usage: <http://physics.nist.gov/cuu/Units/index.html>

Figure and Table Preparation Guidelines. Current information on figure and table preparation can be found at <http://jds.fass.org/misc/ifora.shtml>

Manuscript Central Instructions. Manuscripts are submitted at <http://mc.manuscriptcentral.com/jds>. Full user instructions for using the Manuscript Central system are available at <http://mc.manuscriptcentral.com/jds/index.html?mode=instruction>.

Appendix 1

ABBREVIATIONS

Revised January 2009

The following abbreviations may be used without definition in the *Journal of Dairy Science*. In addition, all chemical elements, common combinations of chemical elements, SI units of measure used with a value, and common amino acids (see list, instructions for authors) should be used without definition. Abbreviations are generally not permitted in the title, running head, and key words. Plural abbreviations do not require "s".

Unrestricted Use

AA = amino acid
ACTH = adrenocorticotropin
AMP = adenosine monophosphate
ANOVA = analysis of variance
AOAC = Association of Official Analytical Chemists International
ARS = Agricultural Research Service
ATP = adenosine triphosphate
ATPase = adenosine triphosphatase
BLUP = best linear unbiased predictor
BSA = bovine serum albumin
cDNA = complementary deoxyribonucleic acid
cRNA = complementary ribonucleic acid
DEAE = diethyl amino ethyl
DNA = deoxyribonucleic acid
DNase = deoxyribonuclease
EDTA = ethylenediaminetetraacetate
ELISA = enzyme-linked immunosorbent assay
FDA = Food and Drug Administration
FSH = follicle-stimulating hormone
GAPDH = glyceraldehyde 3-phosphate dehydrogenase
GnRH = gonadotropin-releasing hormone
HEPES = *N*-2-hydroxyethyl piperazine-*N'*-ethanesulfonic acid
HPLC = high performance (pressure) liquid chromatography
IFN = interferon
Ig = immunoglobulin
IL = interleukin
LH = luteinizing hormone
mAb = monoclonal antibody
mRNA = messenger ribonucleic acid
NAD = nicotinamide adenine dinucleotide
NADP = nicotinamide adenine dinucleotide phosphate
NADPH₂ = reduced nicotinamide adenine dinucleotide phosphate
PAGE = polyacrylamide gel electrophoresis
PCR = polymerase chain reaction
PGF_{2α} = prostaglandin F_{2α}
REML = restricted maximum likelihood
RFLP = restriction fragment length polymorphism
RIA = radioimmunoassay
RNA = ribonucleic acid
RNase = ribonuclease
rRNA = ribosomal ribonucleic acid
Tris = tris(hydroxymethyl)aminomethane
UHT = ultra-high temperature
USDA = United States Department of Agriculture
UV = ultraviolet

Define in Abstract; Unrestricted Use Elsewhere

ADF = acid detergent fiber
ADG = average daily gain
ADIN = acid detergent insoluble nitrogen
ADP = adenosine diphosphate
AI = artificial insemination
BCS = body condition score
BHBA = β-hydroxybutyrate
bST = bovine somatotropin
BUN = blood urea nitrogen
BW = body weight
CN = casein
CNS = coagulase-negative staphylococci
CP = crude protein
CV = coefficient(s) of variation*
DCAD = dietary cation-anion difference
df = degrees of freedom*
DHI = Dairy Herd Improvement

DHIA = Dairy Herd Improvement Association
DIM = days in milk
DM = dry matter
DMI = dry matter intake
EBV = estimated breeding value
ECM = energy-corrected milk
ETA = estimated transmitting ability
FCM = fat-corrected milk
FFA = free fatty acids
GC-MS = gas chromatography-mass spectrometry
GLC = gas-liquid chromatography
h² = heritability*
HTST = high temperature, short time
IGF = insulin-like growth factor
IMI = intramammary infection
LA = lactalbumin
LG = lactoglobulin
LPS = lipopolysaccharide
LSD = least significant difference*
LSM = least squares means*
ME = metabolizable energy
MIC = minimum inhibitory concentration
MP = metabolizable protein
MS = mean square*
MUN = milk urea nitrogen
n = number of samples*
NAN = nonammonia nitrogen
NDF = neutral detergent fiber
NDM = nonfat dry milk
NEFA = nonesterified fatty acids
NE_G = net energy for gain
NE_L = net energy for lactation
NE_M = net energy for maintenance
NFC = nonfiber carbohydrates
NPN = nonprotein nitrogen
NRC = National Research Council
NS = nonsignificant*
NSC = nonstructural carbohydrates
OM = organic matter
PBS = phosphate-buffered saline
PMNL = polymorphonuclear neutrophilic leukocyte
PTA = predicted transmitting ability
r = correlation coefficient*
R² = coefficient of determination*
QTL = quantitative trait loci
RDP = rumen-degradable protein
RUP = rumen-undegradable protein
SAS = Statistical Analysis System
SCC = somatic cell count
SCM = solids-corrected milk
SCS = somatic cell score
SD = standard deviation*
SDS = sodium dodecyl sulfate
SE = standard error*
SEM = standard error of the means*
SNF = solids-not-fat
SNP = single nucleotide polymorphism
SPC = standard plate count
SS = sums of squares*
TCA = trichloroacetic acid
TMR = total mixed ration(s)
TS = total solids
UF = ultrafiltration, ultrafiltered
VFA = volatile fatty acids

*Use generally restricted to tables and parenthetical expressions.

Appendix 2

Selected Units and Terms

The following abbreviations and terms can be used without definition in the *Journal of Dairy Science*.

| | | | |
|---------------------------|---------------------|----------------------------|-------------------------------|
| afternoon | p.m. | millimeters of mercury | mm Hg |
| atomic mass unit | amu | millimolar (concentration) | mM |
| atmosphere | atm | millimole (mass) | mmol |
| base pair | bp | minute(s) | min |
| calorie (gram) | cal | molar (concentration) | M |
| celsius (with number) | °C | molar (mass) | mol |
| centimeter | cm | mole (number, mass) | mol |
| centimeter, square | cm ² | month(s) | mo |
| circa | ca. | morning | a.m. |
| centimorgan | cM | nano | n (prefix) |
| centipoise | cP | newton | N |
| central processing unit | CPU | normal (concentration) | N |
| colony-forming unit | cfu | nanogram | ng |
| counts per minute | cpm | osmolality | use mmol/kg |
| counts per second | cps | outside diameter | o.d. |
| crossed with, times | × | parts per billion | µg/kg |
| cubic | cu | parts per million | mg/kg |
| cubic centimeter | cc, cm ³ | pascal | Pa |
| cubic millimeter | mm ³ | pico | p (prefix) |
| curie | Ci | picogram | pg |
| cycles per second (hertz) | Hz | plaque-forming unit | pfu |
| day(s) | d | probability | P |
| dalton | Da | rennet activity unit | RU |
| deci | d (prefix) | revolutions per minute | rpm |
| deciliter | dL | second(s) | s |
| equivalents | Eq | siemens | S |
| foot-candle | use lx | species | spp. |
| gram | g | subcutaneous | s.c. |
| gravity | g | subspecies | ssp. |
| hectare | ha | unit | U |
| hour(s) | h | volt | V |
| inside diameter | i.d. | volume | vol |
| international unit | IU | volume/volume | vol/vol (use parenthetically) |
| intramuscularly | i.m. | watt | W |
| intraperitoneally | i.p. | week(s) | wk |
| intravenously | i.v. | weight/volume | wt/vol (use parenthetically) |
| joule | J | year(s) | y |
| kilo | k (prefix) | | |
| kilobase | kb | Amino Acids | |
| kilobase pair | kbp | alanine | Ala |
| kilobyte | KB | arginine | Arg |
| kilocalorie | kcal | asparagine | Asn |
| kilogram | kg | aspartic acid | Asp |
| Klett units | KU | citrulline | Cit |
| kiloelectron volts | keV | cysteine | Cys |
| kilopascal | kPa | glutamic acid | Glu |
| liter | L | glutamine | Gln |
| logarithm (natural) | ln | glycine | Gly |
| logarithm (base 10) | log ₁₀ | histidine | His |
| lux | lx | isoleucine | Ile |
| mega | M (prefix) | leucine | Leu |
| meter | m | lysine | Lys |
| metric tonne | tonne | methionine | Met |
| micro | µ (prefix) | ornithine | Orn |
| microcurie | µCi | phenylalanine | Phe |
| micro-einstein | µE | proline | Pro |
| microfarads | µF | serine | Ser |
| microgram | µg | threonine | Thr |
| microliter | µL | tryptophan | Trp |
| milli | m (prefix) | tyrosine | Tyr |
| milliliter | mL | valine | Val |

Appendix 3

Abbreviations of Frequently Cited Journals

| | |
|---|---|
| Acta Agric. Scand. A Anim. Sci. | Bioscience |
| Acta Endocrinol. | Bio/Technology (New York) |
| Acta Theriol. | Biotechnol. Bioeng. Biotechnol. Lett. |
| Adv. Carbohydr. Chem. Biochem. (since 1968) | Br. J. Nutr. |
| Adv. Exp. Med. Biol. | Br. Vet. J. |
| Adv. Genet. | Cancer Res. |
| Adv. Protein Chem. | Can. Inst. Food Sci. Technol. J. |
| Adv. Vet. Sci. Comp. Med. (since 1969) | Can. J. Anim. Sci. |
| Agric. Biol. Chem. | Can. J. Comp. Med. |
| Am. J. Anat. | Can. J. Genet. Cytol. |
| Am. J. Clin. Nutr. | Can. J. Physiol. Pharmacol. |
| Am. J. Clin. Pathol. | Can. J. Zool. |
| Am. J. Obstet. Gynecol. | Can. Med. Assoc. J. |
| Am. J. Ophthalmol. | Carbohydr. Res. |
| Am. J. Pathol. | Cell. Tissue Res. |
| Am. J. Physiol. | Cheese Rep. |
| Am. J. Vet. Res. | Chem. Ind. (Lond.) |
| Anal. Biochem. | Clin. Chem. |
| Anal. Chem. | Clin. Chim. Acta |
| Anat. Rec. | Clin. Endocrinol. |
| Anim. Behav. | Clin. Toxicol. Comp. Biochem. Physiol. (now in series: (A Comp. Physiol., B Comp. Biochem., C Comp. Pharmacol., or C Comp. Pharmacol. Toxicol.) |
| Anim. Breed. Abstr. | Compend. Contin. Educ. Proc. Vet. |
| Anim. Feed Sci. Technol. | Cornell Vet. |
| Anim. Prod. | CRC Crit. Rev. Biochem. |
| Anim. Reprod. Sci. | Cult. Dairy Prod. J. |
| Ann. Biol. | Curr. Opin. Biotechnol. Dairy Field |
| Anim. Biochim. Biophys. | Dairy Ind. Int. |
| Ann. New York Acad. Sci. | Dairy Sci. Abstr. |
| Ann. Rech. Vet. | Dev. Biol. |
| Ann. Zootech. (Paris) | DNA Cell Biol. (since 1989) |
| Annu. Rev. Biochem. | DNA (New York); changed in 1989 to DNA Cell Biol. |
| Annu. Rev. Pharmacol. Toxicol. Antibiot. Chemother. | Domest. Anim. Endocrinol. |
| Appl. Anim. Ethol. | Dtsch. Tierarztl. Wochenschr.; continued in 1972 by DTW Dtsch. Tierarztl. Wochenschr. |
| Appl. Environ. Microbiol. (since 1976) | Electrophoresis |
| Arch. Biochem. Biophys. | Endocrinology |
| Arch. Gefluegelkd. | Eur. J. Biochem. |
| Arch. Tierernahr. | FASEB J. |
| Arch. Tierz. | FEBS Lett. |
| Asian-australas. J. Anim. Sci. | Fed. Proc. (now FASEB J.) |
| Aust. J. Agric. Res. | FEMS Microbiol. Immunol. |
| Aust. J. Biol. Sci. | Fertil. Steril. |
| Aust. J. Dairy Technol. | Food Eng. (New York) |
| Aust. J. Exp. Biol. Med. Sci. | Food Res. |
| Aust. Vet. J. | Food Technol. |
| Bacteriol. Rev. | Gastroenterology |
| Behav. Processes | Gen. Comp. Endocrinol. |
| Biochemistry | Gene (Amst.) |
| Biochem. J. | Genet. Sel. Evol. |
| Biochem. Biophys. Res. Commun. | Genetics |
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J. AOAC; continued in 1992 by J. AOAC Int.
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J. Comp. Pathol.
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J. Endocrinol.
J. Environ. Pathol. Toxicol. Oncol.
J. Exp. Anal. Behav.
J. Exp. Biol.
J. Exp. Med.
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J. Food Prot.
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J. Gen. Physiol.
J. Hered.
J. Immunol.
J. Immunol. Methods
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J. Lipid Res.
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J. Morphol.
J. Nutr.
J. Pharmacol. Exp. Ther.
J. Physiol. (Lond.) [or (Paris)]
J. Range Manage.
J. Reprod. Fertil.
J. Sci. Food Agric.
J. Soc. Dairy Technol.

J. Texture Stud.
J. Toxicol. Environ. Health
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J. Ultrastruct. Mol. Struct. Res.
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Z. Tierz. Zuchtungsbiol.; continued in 1985 by
J. Anim. Breed. Genet.
Zentralbl. Veterinarmed. A, B, or C; continued in 2000
by J. Vet. Med. Ser. A or B
Z. Lebensm. Unters. Forsch.

Appendix 4

Journal of Dairy Science Policy on In Vitro Antimicrobial Susceptibility Tests

Authors should avoid the use of the term “antibiotic” when referring to a specific agent unless that agent is naturally occurring and unmodified (e.g., penicillin). The broader term “antimicrobial agent” is preferred because it includes naturally produced agents, semisynthetic agents, and totally synthetic agents. The term “susceptibility” should be used instead of “sensitivity.” Authors unfamiliar with antimicrobial susceptibility testing should obtain CLSI (formerly NCCLS) document M31 (Clinical Laboratory Standards Institute, 940 W. Valley Rd., Suite 1400, Wayne, PA 19087-1898) for specific information regarding antimicrobial susceptibility testing of veterinary pathogens. CLSI or NCCLS equivalent methods for antimicrobial susceptibility testing available outside the US are also acceptable. A list of these methods is available at http://www.oie.int/eng/normes/mmanual/a_00021.htm.

Two methods are generally used to generate antimicrobial susceptibility data: the agar disk diffusion (**ADD**) method and the minimum inhibitory concentration (**MIC**) method. The use of the term “Kirby-Bauer” to refer to the ADD method is incorrect and should be avoided. The correct citation for this method is the “disk diffusion method of Bauer et al.” The ADD method is a qualitative method and results should be reported as susceptible, intermediate, or resistant (**SIR**). If zone of inhibition diameters are reported, these should be reported in millimeters.

The MIC method is quantitative and results should be reported in micrograms per milliliter ($\mu\text{g}/\text{mL}$). The minimum summary statistics for reporting MIC results from multiple strains of an organism are the MIC_{50} , the MIC_{90} , and the range. The MIC_{50} and MIC_{90} represent the concentrations required to inhibit 50 and 90% of the strains, respectively. The MIC_{50} and MIC_{90} reported should be the actual concentrations tested, not values calculated from the actual data obtained. When

<10 isolates of a species are tested, tabulate only the MIC range of each antimicrobial agent tested. If more than a single drug is studied, insert a column labeled “test agent” between the columns listing the organisms and the columns containing the numerical data, and record data for each agent in the same isolate order. In addition, the percentage of strains categorized as susceptible, intermediate, or resistant may be reported. If only one of these categories is to be reported, the percent susceptible value is preferred. The percentage of resistant isolates is to be reported for an agent, it should include isolates categorized as intermediate.

The percentage of strains susceptible and/or resistant to an antibiotic at its breakpoint concentration may be given only if an appropriate breakpoint has been approved, as by CLSI. Given the paucity of approved breakpoints for mastitis pathogens, authors may use breakpoints from other species (e.g., human breakpoints for ampicillin or canine breakpoints for enrofloxacin). However, authors must clearly state that the breakpoints are not approved for mastitis pathogens. Moreover, authors cannot assign breakpoints or use breakpoints from related antibiotics (except for class testing purposes) or breakpoints developed for other methods.

Authors must indicate that the appropriate quality control tests were performed. Information regarding the frequency of testing and the specific strains tested should be provided. The frequency of quality control testing and organisms tested should conform to the recommendations in the CLSI standard (document M31) or equivalent. A single statement in the manuscript indicating that the results obtained for the quality control documents were within published ranges is acceptable. However, authors may be requested to provide the quality control information during the manuscript review cycle.