CERTIFIED CROP ADVISER

CCA ADVANTAGE

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Making a Successful Customer Newsletter

By David Aeilts
Vista Comm

The primary purpose for a customer newsletter is to build and maintain relationships. Other communication tools do a better job of eliciting responses to offers, teaching or delivering news. "Customer care" is what newsletters do best.

- Prospective customers — The newsletter is unique in its ability to give prospective customers a view inside your company and the feeling they know you. A well-orchestrated newsletter touching on many facets of the dealer-client relationship eliminates the proverbial "cold call."
- Existing customers — The newsletter excels in maintaining relationships by supplementing your "face-to-face" meetings.

What makes a successful customer newsletter? That can be summed up in one word: relevance. It must have value to your customer, and that value must be expressed clearly. Otherwise it will end up stacked on the farm office desk, unread. To be relevant, a newsletter must be (1) brief, (2) personal, (3) easy to navigate, (4) accurate and (5) free of ulterior motives.

BRIEF

The shorter it is the better. The best-read print newsletters are 4 to 6 pages and contain many stories no more than 4 to 8 paragraphs long. These stories must quickly capture readers' attention, express the relevance of the subject and point to where they can go for detailed information or dialogue with the experts.

Remember: *Add e-mail addresses to the contact information you provide at the beginning or end of each story, and CHECK YOUR E-MAIL REGULARLY. This is the preferred method of communication for many young growers.*

PERSONAL

Newsletter copy should reflect one human being addressing another. Words like "you" and "I" trump pronouns that hold the reader at arm's length. The best newsletter articles are written in first person and are accompanied by a photo of the writer. People respond more quickly and easily to a story when they can see the person who wrote it.

One successful Midwestern agribusiness delivers all of its product and service information through newsletter stories that focus on its employees. Each employee is portrayed as a professional, and personal information (spouse, children, hobbies, etc.) is included as an editor's note. The purpose is to form relationships between the customers and employees they see in the field, delivering products and providing services.

EASY TO NAVIGATE

We all have short attention spans. Whether printed or in e-mail form, a newsletter must make it easy for readers to access information they need and move on. One 20-something told me, "I'll read a newsletter if I can get in and out of it in 10 minutes."

The best-read newsletters tell exactly what each story contains up front. If not, beyond the headline, the first paragraph is key. Clearly state the main point of the story in the opening sentences. Many readers will not dig further without knowing what they are digging for.

ACCURACY

A relevant newsletter is also well written, with compelling stories containing few errors. Accuracy and attention to detail support the claims of value being discussed in each article. You can easily destroy good communication by inattention to detail. The value of your argument is lost in misspellings and poorly constructed sentences.

If you really want the reader to accept your message, invest in a good proofreader. Better yet, hire a ghostwriter who can make you look like the valuable resource you really are.

NO ULTERIOR MOTIVES

Stay away from overt sales pitches. A newsletter used to strengthen customer relationships should contain a certain amount of copy obviously valuable to the customer but with no obvious connection to your profitability. These stories draw readers to read future issues, because they believe you genuinely care.

Also, give customer testimonials a try. Readers are starved for comments from satisfied users. Some readers ascribe ulterior motives to stories written by hired guns. However, trot out a neighbor or grower with a similar problem who has found a solution and the cynical heart begins to melt.

Editor's note: *David Aeilts (davea@VistaComm.com) is a senior journalist and customer communication adviser at VistaComm, a Sioux Falls, SD-based professional marketing firm specializing in high-touch, relationship-building communication solutions, both in print and on the Web. Visit VistaComm online at www.vistacomm.com.*

ICCA of the Year Program Announced

By Betsy Ahner
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A clever quote about rewarding excellence would be a great opening for this article. A search of the Web produced enough thought-provoking quotes to meditate on until my next birthday but nothing seemed just right. So I made one up.

"There is no greater recognition of excellence than the recognition that is bestowed upon us by our peers." — Betsy Ahner, 2005

Your International Certified Crop Adviser (ICCA) Board of Directors is putting this into practice in 2005 by encouraging each local state/regional/provincial board of directors to name a Certified Crop Adviser of the Year. The local boards are then invited to submit a nominee to be considered for the International certified crop adviser of the Year award.

This award is designed to recognize a current certified crop adviser (CCA) who delivers exceptional customer service and is highly innovative. This CCA is a leader in his/her field and contributes substantially to the exchange of ideas and the transfer of agronomic knowledge within the agriculture industry.

The ICCA of the Year will be announced at the American Society of Agronomy (ASA) Annual Meeting in Salt Lake City, Nov. 6-10, 2005.

The award consists of hotel and travel expenses for two to the ASA Annual Meeting in November, $500 cash, a commemorative plaque and a one-year membership in the American Society of Agronomy. The ICCA of the Year will also be a spokesperson for the CCA Program.

When your local board of directors puts out the call for nominations for the Certified Crop Adviser of the Year award, please respond. Agriculture is a demanding business, and no one knows better than you which CCAs deserve the recognition of excellence by their peers.

Soil Salinity, a Silent Killer

In the United States almost a quarter of the irrigated lands exhibit some degree of salinization, resulting in significant crop losses. Worldwide, 5 million acres of arable land are lost each year due to soil salinization. In the Colorado River Basin alone costs of damages from dissolved salts exceed $300 million each year.

If these facts disturb you and you would like to assist your customers with this problem, consider attending the International Salinity Forum, April 25-28, 2005, Riverside, CA.

Conference topics of special interest to CCAs include Understanding Salinization; Mapping, Monitoring and Assessment Methods; Emerging Desalinization Technologies; Wildlife Impacts; Irrigation and Return Flow in Saline Environments; Regional Watershed and Basin Management Strategies; Dryland Salinity; Rangeland Salinity; Plant Salt Tolerance and Breeding; Response of Crops to Salinity; and Chemical and Physical Properties of Salt-Affected Soils.

Invited speakers include Daniel Hillel, Ben-Gurion University, Negev, Israel; David Freeman, Clemson University, SC; J. Beltran, Food and Agricultural Organization of the United Nations, Rome, Italy; and Dennis Corwin, George E. Brown Salinity Laboratory, Riverside, CA

Other U.S. speakers are from Colorado, New Mexico, Virginia, Utah, Indiana, Arizona, Georgia and Louisiana. International speakers from Alberta and Saskatchewan, Canada; Syrian Arab Republic; Australia; Mexico; Korea; Argentina; and England have also been invited.

For more information and registration forms, visit *www.waterresources.ucr.edu* and click on "International Salinity Forum."

What's Ahead for the New Congress?

By Karl Glasener
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Congress will return to town late this month for the commencement of the new 109th Congress.

Fired up at increasing their majorities in both the House and Senate and with a reelected Republican president, GOP leaders know the cards are stacked in their favor to advance their conservative agenda.

Arguably, the only potential obstacle to their plan is new Senate Minority Leader Harry Reid (D-NV), who has vowed to unite the 45 Senate Democrats to define and promote the Democratic agenda. Reid is consolidating staff operations into a "war room" to counter the GOP's political message. He is also establishing a press operation that is planning more aggressive attacks on Republicans.

Regardless of partisan politics and strategies, both parties know certain key issues including Iraq, Social Security, tax reform and deficit reduction must be tackled soon. Making matters worse is the real possibility of "budget reconciliation," a deficit-reduction plan requiring government-wide spending cuts possibly to the tune of $2 billion.

CCA ISSUES

The fiscal implications of addressing these issues will make for an austere budget environment. Domestic spending for '06 and beyond — including funding for research, education, extension and conservation programs funded through USDA, many of interest to CCAs, e.g. EQIP, CSP, CRP — will likely decline.

Though the current farm bill does not expire until 2007, congressional aides are talking openly about rewriting farm programs in 2006, a year ahead of schedule. Lawmakers might begin scheduling field hearings on the next farm bill in 2005.

THE NEXT FARM BILL

Why the sudden interest in taking on the burdensome and exhausting task of a farm bill rewrite so early?

First, an early rewrite would ensure Republican control over its development and the larger majorities in both the House and Senate give the GOP greater clout to move forward its agenda.

Second, this year's World Trade Organization's decision that U.S. cotton subsidies are unfair sent ripples of fear through the farm community. That decision, now on appeal, may force the U.S. to reduce subsidies that have encouraged U.S. production and reduced world commodity prices.

Third, the ever-ballooning federal budget deficit will force Congress to impose spending cuts on existing programs, e.g. conservation programs. Based on recent congressional will to pillage these programs — toward the end of the last Congress lawmakers tapped into Conservation Security Program funds to pay for drought relief during deliberations over '05 appropriations bills — there is every reason to anticipate additional hits to conservation funding.

There could also be reductions in payment rates for subsidies to grain and cotton growers. President Bush's nominee for Secretary of Agriculture, Nebraska Governor Mike Johanns, will play a strong role in the direction any new farm bill takes. His knowledge of current USDA conservation programs and stakeholder interests will be significant in determining the relevance of conservation programs to certified crop advisers.

Other issues, which lawmakers must address, include dairy subsidies scheduled to expire next year and a provision of the law that requires country-of-origin labels on meat. The labeling measure has been placed on hold until 2006 because meatpackers and producer groups prefer a voluntary program.

There are also reasons why Congress might want to wait until 2007 to do a new farm bill. Without question, the biggest one is the Doha round of the World Trade Organization trade talks. Last summer negotiators were able to reach a framework agreement to cut farm subsidies and tariffs worldwide. Troublesome details such as the size and timing of the cuts must still be worked out, and will probably occur well into 2006. Clearly, in order to reach a consensus, the U.S. will be forced to significantly change its farm programs.

Early-Season Weed Control Online Learning Module Offers One CEU

Earn one Continuing Education Unit (CEU) in Crop Management through a new interactive online learning module that offers an in-depth look at pre-emergence weed control. The unique tool provides insight into corn-weed interactions during early growth stages, research information and recommendations for controlling weeds from the start.

The module is available at *http://learn.farmassist.com*. It can also be accessed through the self-study page of the CCA Web site, *www.agronomy.org/cca/cgi-bin/selfStudyList.cgi*. Pass the quiz at the end of the module and you will receive one CEU in Crop Management, a convenient, no-cost CEU option. Sponsored by Syngenta Crop Protection, the module also serves as an educational tool for growers or others interested in gaining a better understanding of early-season weed competition and the value of pre-emergence weed control.

Methane Emissions of Beef Cattle on Forages: Efficiency of Grazing Management Systems

By H. Alan DeRamus, Terry C. Clement, Dean D. Giampola, and Peter C. Dickison

EARN ONE CEU!
All CCAs may earn up to 20 Continuing Education Units (CEUs) per two-year cycle as board-approved self-study articles which will include CCA Advantage articles. The CCA CEU logo (above) marks all pre-approved material, with the CEU value indicated by the number in the middle. To receive one CEU in nutrient management, read this article, fill out the attached exam and mail the tear-out form, along with $10, to the American Society of Agronomy.

The methane (CH_4) produced from enteric fermentation by domesticated livestock is estimated to contribute 21% of total U.S. anthropogenic emissions of "greenhouse gas," with cattle contributing 95% of total livestock emissions. Methane produced by enteric fermentation in grazing cattle is seen as a strong contributor to various climate change scenarios associated with global warming. The possibility of limiting CH_4 emissions from beef cattle by improving grazing management systems provides economic as well as environmental benefits. The best strategy for mitigation of cattle CH_4 is probably through enhancing the efficiency of feed energy use.

About half of the beef cows in the U.S. are located in the South. These operations have frequently revealed low profit potential. Studies have shown that income from calf sales is low because total calf production may be as low as 70 kg ha^{-1} annually. Cow–calf production systems in the southern U.S. are based primarily on forages. Most of these systems consist of warm-season perennial grasses during much of the grazing season. During most of that time, however, the dominant, warm-season perennial grasses, which are introduced species, lack sufficient quality for maximum sustained weight gain. It is speculated the genetic production potential of most cow herds is limited by the lack of, or management for, adequate amounts of high-quality forage. Average weaning weights of 150 to 200 kg for calves in many southern states show lack of proper forage management. In addition, in Louisiana these warm-season forages are harvested for hay when they are rather mature and of low quality and are fed to most beef cattle herds for maintenance during the winter. The long growing season allows extensive grazing of the forage, which is a more efficient means of harvesting. With controlled-rotation grazing management or management-intensive grazing (MIG) systems, the potential exists to maximize both forage and beef production and increase the efficiency of beef production.

The objectives of this project were to determine and demonstrate methods for improving beef production per unit of methane emission, and to measure the productivity of beef cattle grazing different adapted forages under traditional and improved management systems.

MATERIALS AND METHODS

The sulfur hexafluoride (SF_6) tracer method for measuring eructated CH_4 was used in this study. It involves placing a small brass permeation tube, with a known permeation rate of SF_6, in the reticulum. Cattle were raised and maintained under the same conditions used in commercial beef cattle production in the area.

In October 1996, both cows and heifers were blocked on weight and age at the beginning of the experiment and assigned to either the treatment or control group. "Tester" animals in each of the two herds included six yearling heifers with an average weight of 390 kg and six cows with an average weight of 540 kg that had nursing calves. Methane measurements were obtained from these "tester" animals in each herd. In 1997, six weanling heifers were added to each herd.

Methane emissions from the three classes of beef cattle were collected on warm-season pastures of bahiagrass and bermudagrass in spring, summer and autumn and ryegrass during January through April.

All pastures were on Memphis silt loam soil. Pasture treatments included:

(1) Control: unimproved pasture with naturalized revegetated cropland. Base forages were warm-season perennials such as bermudagrass and bahiagrass in combination with numerous forbes. Pastures were routinely grazed with continuous stocking during a grazing season with available dry matter (DM) of 500 to 1,000 kg ha^{-1}.

(2) Treatment: well-managed, warm-season perennial pastures of bahiagrass or common bermudagrass, and overseeded with annual ryegrass for use during the appropriate growing season, using best management practices (BMP) with management-intensive grazing (MIG). Each paddock of bahiagrass or bermudagrass was overseeded with ryegrass in September for winter grazing. Phosphorus and potassium were applied in the autumn to maintain a medium soil test level of fertility. The warm-season pastures in BMP received 50 kg N ha^{-1} as ammonium nitrate in split applica-

tions during the growing season. Ryegrass received 40 kg N ha^{-1} as urea in January and again in March.

Twenty-four paddocks of approximately 0.5 ha each in the BMP area were used with MIG with a stocking density of 50 to 60 animal units ha^{-1} d^{-1}. An appropriate recovery time of 15 to 30 days between each grazing period produced 1,000 to 2,000 kg of DM forage ha^{-1}. This stocking density allowed maintenance of forage with at least 500 kg of DM ha^{-1} residue in each grazed paddock.

The unimproved pasture (control) was grazed with continuous stocking throughout the growing season with a herd stocking rate sufficient to maintain at least 500 kg ha^{-1} of available DM forage. Grazing management was established to provide sufficient forage to allow an adequate voluntary intake.

Bahiagrass hay was used as necessary during the winter as a maintenance diet. Hay and various protein supplements were used for the two herds. Protein supplements included: (1) cottonseed meal and corn (CSMC) to make a 14% crude protein (CP) mixture, (2) urea and corn mixture (URC), 14% CP, (3) protein–molasses block (PMB) and (4) limited ryegrass (LRG) grazing when available.

The control herd was managed under conditions similar to those most producers in Louisiana practice. It was maintained on the same pasture at a stocking rate of two cows per hectare. Forage was sometimes limiting when weather was not favorable. Also, this herd was "wintered" with limited supplementation that caused weight loss of about 20% of precalving weight. Ryegrass was available for grazing one or four hours daily.

The BMP pastures were periodically fertilized to maintain a medium level of soil fertility and the animals were managed intensively with periods of stay of one to three days in each paddock to obtain the highest-quality forage available. The warm-season perennial grasses were more tolerant of traffic and the quality difference usually did not justify a paddock shift on a daily basis. Ryegrass, however, being more upright-growing and very high quality, when grazed, had animal rotation with paddock shifts at least daily.

RESULTS AND DISCUSSION

Methane emissions showed considerable variation among different classes of animals, seasons of the year and forages. Daily emissions of 86 to 193 g of CH_4 from heifers and 120 to 255 g CH_4 d^{-1} from cows were within the range of total CH_4 emissions as reported by others using the SF_6 tracer method. The ranges of annual CH_4 if calculated from the ranges of daily emissions reported in this study, would be between 32 and 83 kg per heifer and between 60 and 95 kg per cow. However, the BMP system always had significant effects on the amount of CH_4 that cows emitted with BMP being lower than the continuous grazing. No significant differences were observed in the heifers during spring and summer of 1997 on either bermudagrass or bahiagrass.

A study in 1999 observed that CH_4 production was higher on tropical forage diets than published values for temperate forage diets. This higher methane conversion rate (MCR) of tropical forage species is presumably related to the relatively high levels of fiber and lignin, low levels of nonfiber carbohydrate and low digestibility compared with temperate forage species.

The average body condition scores for cows in both management systems varied between 4 and 7 (on a scale of 1 to 9) when recorded biannually. These scores indicated that cows were generally in acceptable condition.

On bahiagrass, the BMP cows gained weight (ADG) while the control cows lost weight during the September to October (fall 1996) collection. All heifers lost weight. Differences were observed in weight gain between seasons in cows but there were no other significant differences among the treatments for weight gain on bahiagrass. All groups had less DM intake in the fall collection than required to support production above maintenance. The warm-season forages of bahiagrass and bermudagrass in summer and autumn did not support high weight gain or efficient beef production. Forage quality of bahiagrass and in vitro organic matter digestibility usually limits animal performance in the latter part of the summer and into the fall. When forage quality is low, a low stocking density and continuous stocking allow the animals to select portions of the forage plant that are higher in quality. On bahiagrass, the control cows gained slightly more weight in spring and summer than the BMP cows. Continuous stocking allows maximum selective grazing, which frequently results in higher per animal responses than from rotational stocking. This advantage for continuous stocking was observed with both cow and heifer weight changes on bahiagrass or bermudagrass in the July to October 1997 collections.

Daily CH_4 emissions ranged from 120 to 249 g d^{-1} for cows and 86 to 166 g d^{-1} for heifers grazing on bahiagrass. Emissions were lower in the spring when forage quality was higher than in summer and fall with forage quality declining. There was variation between seasons, when CH_4 emissions are expressed per unit of MW, but the BMP grazing management system produced significantly less CH_4 at each collection. The calculated annual rate of CH_4 emission on bahiagrass of 45 to 97 kg for cows and 34 to 61 kg for heifers is well within the range of reported values.

CH_4 emissions on bermudagrass varied between seasons with both cows and heifers emitting less CH_4 in summer of 1997 than in either fall collection. Both cows and heifers emitted less CH_4 on BMP than on continuous bermudagrass pastures. The quality of the forage is also reflected in the production observed on the bermudagrass. Average daily gain was higher in summer than in autumn for both cows and young heifers, and ADG was higher on BMP pasture than on continuous grazing. Both cows and heifers had higher ADG on the bermudagrass BMP pastures. Forage intake is a function of forage quality in that as quality increases, intake also increases.

CH_4 emissions of the growing yearling heifers on ryegrass were significantly different at each collection. One-hour grazing time on ryegrass was adequate as a protein supplement but not sufficient to support the genetic potential production (weight gain) of these heifers. The beef weight gains of the four-hour and ad lib treatments confirmed that high-quality forage can support excellent rates of gain. These stocker heifers gained 1.26 kg daily on ad lib, 0.71 kg daily on four-hour, and only 0.12 kg daily on one-hour grazing of ryegrass. Cool-season annuals can greatly extend the forage grazing season by providing an excellent-quality forage capable of producing gains of 1.0 kg d^{-1}. These weight gains on ryegrass also show increased efficiency of CH_4 emission with increased grazing time. When CH_4 emissions are expressed as CH_4 produced per kg of weight gain, the higher rates of gain are certainly more

efficient. Methane emissions per kg of ADG were only 20 to 30 g on ad lib ryegrass that supported 1.1 kg ADG during the spring season. Forage quality as measured by in vitro organic matter digestibility declined from a digestibility in the high 70s in February to the mid 60s in April; CH_4 emission per unit of gain increased for similar amounts of grazing time. With the high-quality ryegrass forage, the additional grazing time was critical to achieve adequate dry matter intake for these stocker animals. The higher weight gain resulted in increased efficiency of beef production with less CH_4 being emitted per unit of gain on ad lib ryegrass. Compared with the one-hour grazing, the ad lib ryegrass produced approximately one-tenth the CH_4 per kg of beef weight gain.

Similar results of CH_4 emissions of 1.51 to 2.34 g of CH_4 per unit of MW were obtained in 1998 as 1997 with the protein supplements fed as wintering diets to the mature cows. Methane emissions on all the protein supplements were significantly greater than observed on the ad lib ryegrass. Differences observed between the protein supplement diets on bahiagrass hay reflected the quality of the hay with greater CH_4 emissions on the lower-digestibility hay. The laboratory analyses of the hay indicated that hay alone was not sufficient for maintenance of these cows.

Protein supplement comparisons were continued in 1998 with the two management levels of feeding with each of the protein supplements. The two management systems were planned to allow the BMP herd to maintain or gain body weight of at least 0.5 kg d^{-1} gain and positive condition scores while the control level of feeding was designed below maintenance to allow a slight weight loss. Early-season limit grazing (one or four hours) of ryegrass (LRG) resulted in less CH_4 emission than other protein supplements. However, during late-season grazing LRG produced the highest CH_4 emissions recorded. With higher forage intakes, more CH_4 was produced. Within each protein supplement, higher feeding levels produced significantly more CH_4.

Development of "environment-friendly" livestock production systems demands that the increased production be met by increased efficiency of production and not through increased animal numbers. Annual CH_4 emissions from the BMP in this study reflect a reduction of 22% when projected with the higher values obtained from the control or continuous grazing system. This figure is a prediction graph using daily CH_4 emission values selected from data of the two management systems represented in this study. By selecting the forage system each month that resulted in the least CH_4 emissions, these mature cows would emit 67.5 kg CH_4 annually vs. 86 kg CH_4 for the continuous grazing and wintering system with the most CH_4 emissions.

Methane emissions are a function of the size of the animal population, quantity of feed consumed and efficiency by which an animal converts feed to product. With a greater amount of CH_4 emitted the efficiency is lower. Improving animal productivity decreases CH_4 emissions per unit of product. At the basic level, feed goes to maintenance and product. Maintenance is the proportion of feed needed to satisfy basic metabolic requirements that keep the animal alive. A significant fraction of the CH_4 emitted by cattle (40–60%) comes from the proportion of feed used for maintenance.

Reproductive efficiency was measured by calving interval, adjusted weaning weights, kg of calf produced per cow exposed, and CH_4 emissions per unit of beef produced. Females in the two management systems were naturally mated from Dec. 15, 1997, through March 15, 1998. Pregnancy rates showed average days pregnant for mature BMP cows were 146.5, as compared with 111.5 days for the control group. The plane of nutrition in the BMP herd was sufficient to support earlier cycling and thus earlier pregnancy and calving dates. This data reflected a 21% advantage in calving interval for the BMP treatment cows. Weaning weights on all calves born in the autumn of 1997 were adjusted according to age of the dam and sex of offspring. The BMP group was 29 kg heavier than the control animals with a 13% advantage in weaning weight efficiency. Total forage was affected by a relatively mild winter and severe spring drought that certainly could have affected pregnancy rates and weaning weights for both groups.

CONCLUSIONS

As ruminants, cattle have a relatively high maintenance requirement associated with rumen fermentation. Therefore, CH_4 emissions for maintenance cannot be modified through management strategies. Emissions of CH_4 beyond those associated with maintenance can be reduced based on level of productivity of the animal. Consequently, implementing proper grazing management practices to improve the quality of pastures increases animal productivity and has a significant effect on reducing CH_4 emission from fermentation in the rumen. Enhancing the level of productivity decreases the maintenance subsidy and thus decreases obligatory CH_4 emissions from fermentation of the feed associated with animal maintenance.

Management-intensive grazing is an effective form of grazing BMP. Advantages may include more uniform grazing, better stand maintenance of some plant species, greater animal production per hectare and increased opportunity for heavy grazing pressures without permanent damage to plants. This management leads to vigorous plant growth, healthy soil and a more constant, nutritious diet for cattle. Overall beef production efficiency increases and as a result the CH_4 emissions per unit of product and total CH_4 emissions into the atmosphere are reduced.

As we gain a better understanding of how grazing management strategies affect livestock responses in a whole-system context, we can increase the efficiency of the forage production system and reduce climate damage. We will also maintain better control of the plant and soil resource while increasing beef production efficiency.

Editor's note: *Content was adapted from the paper "Methane Emissions of Beef Cattle on Forages: Efficiency of Grazing Management Systems," which was published in the Journal Environmental Quality, Vol. 32, January-February 2003, and is courtesy of the authors H. Alan DeRamus, Terry C. Clement, Dean D. Giampola, and Peter C. Dickison.*

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2. Answer the questions by clearly marking an "X" in the box next to the best answer for each question.
3. Complete the self-study exam registration form on the back of this page.
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6. **Mail your self-study exam and fee to:** ASA c/o CCA Self-Study Exam, 677 S. Segoe Road, Madison, WI 53711. *Please allow 60 days for processing.*
7. An electronic version of this test is also available at *www.AgProfessional.com*. Go to the Certified Crop Advisers section (lefthand column) and access the "CCA Advantage" link.

Methane Emissions of Beef Cattle on Forages: Efficiency of Grazing Management Systems

January Self-Study Examination

DETACH HERE

1. Of the total U.S. anthropogenic emissions of "greenhouse gas," the methane produced from enteric fermentation by domesticated livestock is estimated to contribute:
[ ] a. 15%.
[ ] b. 21%.
[ ] c. 26%.
[ ] d. 31%.

2. Of the beef cows in the U.S.:
[ ] a. 20% are located in the South.
[ ] b. 30% are located in the South.
[ ] c. 40% are located in the South.
[ ] d. 50% are located in the South.

3. All study pastures were:
[ ] a. loam.
[ ] b. clay loam.
[ ] c. silt loam.
[ ] d. sandy loam.

4. The best management practices (BMP) pastures were periodically fertilized to maintain:
[ ] a. a low level of soil fertility.
[ ] b. a medium level of soil fertility.
[ ] c. a high level of soil fertility.
[ ] d. green forages.

5. Animals on the best management practice pastures were managed with periods of stay of:
[ ] a. 1 to 3 days.
[ ] b. 2 to 4 days.
[ ] c. 3 to 5 days.
[ ] d. 4 to 7 days.

6. For cows, the range of annual methane would be between:
[ ] a. 50 to 85 kg/cow.
[ ] b. 60 to 95 kg/cow.
[ ] c. 70 to 105 kg/cow.
[ ] d. 80 to 115 kg/cow.

7. In the spring when forage quality was higher, emissions were:
[ ] a. at their lowest.
[ ] b. similar to summer emissions.
[ ] c. similar to fall emissions.
[ ] d. at their highest.

8. Compared to continuous bermudagrass pastures, the BMP pastures:
[ ] a. produced less methane emissions for both cows and heifers.
[ ] b. produced less methane emissions for only the cows.
[ ] c. produced less methane emissions for only the heifers.
[ ] d. produced higher methane emissions for both cows and heifers.

Over

9. Annual methane emissions from the BMP in this study reflect a reduction of:

[ ] a. 15%.
[ ] b. 18%.
[ ] c. 22%.
[ ] d. 25%.

10. A significant fraction of the methane emitted by cattle comes from the proportion of feed used for maintenance, approximately:

[ ] a. 10 – 30%.
[ ] b. 20 – 40%.
[ ] c. 30 – 50%.
[ ] d. 40 – 60%.

SELF-STUDY EXAM REGISTRATION FORM

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Credit Card #: _____ Type of Card: Visa ❑ Mastercard ❑ Discovery ❑ Am Express ❑

Expiration Date _____ Name on Card: _____

Enclose a $10 check payable to American Society of Agronomy.

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I certify that I alone completed this self-study course and recognize that an ethics violation may revoke my CCA status.

This exam issued January 2005 expires January 2008.

DETACH HERE

SELF-STUDY EXAM EVALUATION FORM

Rating Scale: 1=Poor 5=Excellent

Information presented will be useful in my daily crop advising activities: 1 2 3 4 5

Information was organized and logical: 1 2 3 4 5

Graphics/tables were appropriate and enhanced my learning: 1 2 3 4 5

I was stimulated to think how to use and apply the information presented: 1 2 3 4 5

This article addressed the stated competency area and performance objective(s): 1 2 3 4 5

Briefly explain any "1" ratings: _____

Topics you would like to see addressed in future self-study materials: _____