CCA ADVANTAGE

The Voice of the Certified Crop Adviser Program
American Society of Agronomy
www.agronomy.org/cca

Certification: It's What Professionals Do

By Steve Drake, President, Winning Formula, St. Louis, MO

The International Certified Crop Adviser (ICCA) program has initiated an external communications program to increase awareness of Certified Crop Advisers (CCA) with assistance from Winning Formula Communications (WFC). The program is built around several key messages that are repeated several times in select media outlets.

The CCA program is geared to three audiences – farmers, employers and CCAs. The goal in reaching farmers is to convey that they can enhance their profits by working with a certified professional who acts as a kind of "risk management" tool. Certification assures a farmer the adviser is qualified to do the job. For employers the campaign stresses that CCAs are on staff and are an appreciating asset. To the CCA audience, the campaign stresses that the certification process separates CCAs from other farm advisers.

Working With the Media

Earlier this year, WFC put into place its campaign to relay the key messages and aim for 27 "hits" with its audiences. The program includes news releases about developments within the organization, advice columns authored by CCAs in targeted farm trade publications, interviews on selected radio programs and networks such as AgriTalk, and 30-second radio spots for farm radio.

In February a release announcing the Memorandum of Understanding (MOU) between the American Society of Agronomy's Certified Crop Adviser Program and USDA's Natural Resources Conservation Service (NRCS) was distributed to 1,200 ag-related media contacts. The release also was made available to state and regional leaders who shared the information with local media.

Late last year, WFC coordinated with editors from Farm Progress publications to initiate a series of CCA advice columns. These monthly columns feature CCAs as authorities on agronomic themes and topics. Currently, monthly articles are being placed for North Dakota and South Dakota CCAs in *The Dakota Farmer*, as well as advice columns for *Illinois Prairie Farmer, Indiana Prairie Farmer, Ohio Farmer* and *Wisconsin Agriculturist* magazines.

Other print initiatives include a generic CCA "image" brochure for state leaders to customize and distribute, as well as an ad that can be "tweaked" to reflect a state CCA program's messages.

Trade Shows

A trade show exhibit will be on display in late July at the Agricultural Publications Summit (APS) annual convention in Cleveland, OH. There, 400 editors, publishers and others affiliated with ag print media will be on hand to interact with CCAs and administrators.

Broadcast elements include providing a booth at the National Association of Farm Broadcasters' (NAFB) convention in Kansas City in November 2003 and developing national broadcast news stories on CCA-related topics. At NAFB's annual "Trade Talk" segment of the convention, CCA administrators and technicians will be on hand to conduct interviews with farm broadcast media.

Several CCAs in the Midwest are proactively implementing these tactics. Pivotal to their success is establishing relationships with local media. They are emphasizing the "Rule of 3" philosophy in terms of relating three things they do and details about their areas of expertise. In doing so, CCAs position themselves as "experts" in specific areas of conservation and farm implementation.

In addition, the CCAs are building awareness about how their certification makes them the preferred experts with farmers. One way to do this is to post a sign with the CCA logo, alerting those interested that a CCA person is on staff in that office. Such signs help build an air of professionalism and pride. This will undoubtedly in turn lead to more effective recruitment of future CCAs, solidifying the organization as the true experts in agriculture, conservation and farming.

Professional Practitioners Sessions in Denver Earn CEUs at ASA-CSSA-SSSA Annual Meetings

Certified professionals can earn up to 16 Continuing Education Units (CEUs) over 2½ days at the Annual Meetings of the American Society of Agronomy (ASA)-Crop Science Society of America (CSSA)-Soil Science Society of America (SSSA) in Denver, CO, Nov. 2-6.

Division A-9, Professional Practitioners, features four symposia Monday, Nov. 3, three on Tuesday and one Wednesday morning, for a total of 16 CEUs toward Certified Crop Adviser (CCA) and other ARCPACS certification programs. The symposia are organized so certified professionals can receive CEUs in professional development and also in the nutrient management and soil and water management performance areas.

Even if you don't need all 16 CEUs, these sessions feature current research summarized specifically for the practitioner, according to Alan Blaylock, Agrium US Inc., division chair.

Immediately after Wednesday morning's symposium, the division's business meeting will take place. Blaylock invites all practitioners, member or not, to participate in this session.

The Annual Meetings begin Sunday evening with the ASA-CSSA-SSSA popular Plenary Session beginning at 7 p.m. on Nov. 2, featuring Margaret Davidson of National Oceanic and Atmospheric Administration. Experts in soil-root relationships, atmospheric gases, conservation biology and sustainable agriculture are the featured lecturers.

A roundtable, "Meeting the needs of professional soil scientists," co-hosted by the U.S. Consortium of Soil Science Association (USCSSA) and SSSA, will be held on Tuesday, Nov. 4, from 7:30 to 9:30 p.m. at the Adams Mark Hotel.

A full slate of technical oral and poster paper sessions covering such topics as soil nutrient management, soil and water conservation, crop management and pest control are scheduled through noon Nov. 6. The event also features supplier exhibits, tours and childcare.

REGISTRATION INFO

For the latest updates on sessions and times, or to register and make housing reservations, visit *www.asa-cssa-sssa.org/anmeet*, *dvlovick@agronomy.org* or call 608/273-8090 ext. 339 and ask to receive the Pre-Registration Brochure, which features a registration and housing form.

ASA-CSSA-SSSA members who register by Sept. 19 receive the pre-registration rate of $300; after Sept. 19 it is $355. The non-ASA-CSSA-SSSA-member rate is $400 before Sept. 19 and $455 after Sept. 19. A one-day registration is available on-site, $150 for members and $175 for nonmembers.

Certified professionals can become members of ASA-CSSA-SSSA for as little as $73, and the membership is good through all of 2004. As an added incentive, the Societies are offering a discounted rate to new certified members. Certified professionals who have never before been members of ASA-CSSA-SSSA qualify for the first year introductory rate of $21, and the membership is good through all of 2004. To become a certified member, call 608/273-8090, ext. 305.

A-9 PROFESSIONAL PRACTITIONERS DIVISION SYMPOSIA

Tentative Schedule

Please see the Annual Meeting Program Book online at www.asa-cssa-sssa.org/anmeet for all times and locations.

MONDAY MORNING, NOV. 3

- "What Is the Role of Crop Residue and Organic Matter in High Yielding Systems?" — Lance Murrell
- "What Are the Best P Fertilization Strategies for the Great Plains?" — Mike Stewart

MONDAY AFTERNOON, NOV. 3

- "Can Plant Root Systems Be Managed for Efficient Crop Production?" — Kevin Barber
- "How Do We Make the Most of Available Water? Converting Water into Harvestable Crop" — Jim Bauder

TUESDAY MORNING, NOV. 4

- "Are Management Zones Useful and Practical in Precision Agriculture?" — Dwayne Westfall
- "Why Is Chloride Fertilization Important for Small Grains?" — Ray Lamond

TUESDAY AFTERNOON, NOV. 4

- "How Do We Manage Soil Salinity and Sodicity Problems?" — Jim Bauder

WEDNESDAY MORNING, NOV. 5

- "What Do We Do With All This Manure?" — Scott Murrell

Chairman's Corner

Marketing CCA

By Raymond Ward, CCA
President, Ward Laboratories Inc.

Raymond Ward, CCA
North Central
Representative
International CCA Board

I have enjoyed my term on the International CCA Board.

You have read about some of the activities the Board has completed recently. The Strategic plan has given the Board a focus on activities. The Board has established a new educational area, Professional Development, which allows a few hours for fulfillment of the 40 hours per cycle but does not replace the five hours needed for each of four basic categories. The Board has adopted a standardized leniency program for continuing education units, so all local boards have a standardized plan for working with CCAs who are short on hours for a cycle. These examples are just a few of the ICCA Board's ongoing activities.

One of the goals of the strategic plan is to develop a stronger CCA visibility to producers, suppliers and the public. I am excited about our presence in the new publication *Ag Professional*. This publication will provide very good visibility to crop producers and their suppliers. This is part of a marketing plan the ICCA board is developing.

CCA Status a Source of Pride

I would like to emphasize the importance of the individual crop adviser in promoting CCA. As a certified crop adviser you have studied and reviewed the science of crop production so you could pass the national and state examinations that measure your competency. The exams are difficult enough that many fail on their first attempt. This demonstrates the competency of the individuals that pass the tests. This information is important to you and it is also important to the farmers you serve and to the public living in your service area. Be proud to be a CCA.

Another value of the CCA is the continuing education (CEU) classes that are necessary to maintain the CCA status. Forty classroom hours of continuing agronomic education are required every two years. This means the CCA will continue to learn about new research and new technology concerning the science of crop production. Take pride in the education process.

Spread the Word of CCA's Value

The success of the CCA program can be demonstrated by the improvements that have been made in application rates of pesticides and fertilizers. This is one example of how important the CCA program is to agriculture. There are many more examples that you can use to promote CCA. We should be willing to tell everyone the contributions that the CCA program has made to increase the efficiency of crop production and at the same time enhance air, soil and water quality.

The local crop adviser is visible to farmers and non-farm folks. When I visit with these stakeholders, I discuss improvements that have been made in our agriculture system since the CCA program was initiated. Many improvements have been made in reducing pesticide use and in optimizing fertilizer application rates. I am sure each of you can use your experiences to relay the message of CCA value.

Many improvements have been made in reducing pesticide use and in optimizing fertilizer application rates. I am sure each of you can use your experiences to relay the message of CCA value.

The International Board has made the decision to spend some resources on marketing CCA. Our strategic plan's vision is to be the most valuable certification a professional crop adviser can hold. Each individual CCA plays a part in this vision. As your CCA activities become more visible in your community, the ICCA vision will be one more step closer to its goal. A great share of the marketing has to come from the individual CCAs in their local areas. Be proud of the accomplishments in becoming a CCA and take pride in being a CCA.

Continuing Education Self-Study Course

Nutrient Management

CCA 1 CEU

Dairy Diet Phosphorus Effects on Phosphorus Losses in Runoff From Land-Applied Manure

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.

By Angela M. Ebeling, Larry G. Bundy, J. Mark Powell and Todd W. Andraski

Phosphorus loss in runoff from cropland is an environmental concern because this P often promotes weed and algae growth in lakes and streams. When these weeds and algae die and decompose, dissolved O_2 levels in lakes and streams are depleted, which can lead to odors, death of fish and a general degradation of the aesthetic and recreational value of the environment.

Phosphorus from land-applied manure is one of the major sources contributing to soil P accumulation in Wisconsin, and increasing evidence shows that the amount of P in manure could be substantially reduced by avoiding excess P supplementation of dairy rations. A 1999 study reported that the average dairy diet in the U.S. is supplemented to contain 4.8 g P kg^{-1}, while only 3.8 g P kg^{-1} is needed for optimum milk production and reproductive efficiency. This is a 25 percent over-supplementation of dietary P, based on National Research Council standards. A study in 2000 discussed decreasing P in dairy cow diets without negatively affecting performance and reproductive ability, and cited an earlier study showing that dietary P could be lowered from 6.5 to 4.5 g P kg^{-1} without consistently influencing milk production or reproductive performance. Several studies have shown that decreasing dietary P lowers P excreted in manure.

Phosphorus excretion in manure depends largely on the level of P intake. If P supplementation could be reduced to the minimum concentration needed for optimum production, the amount of P in manure and in applications to farmland would also decrease. The objective of this study was to determine dairy diet P effects on the amounts and forms of P in manure as well as on P losses in runoff from land-applied manure. To relate this work to on-farm manure management practices, we included a manure application strategy simulating an N-based nutrient management approach where manures from two P diets were applied at the same manure rate. In addition, a P-based nutrient management approach was also included where manures from the differing P diets were applied to achieve the same P addition.

Materials and Methods

Dairy diet P effects on P losses in runoff in no-till corn were determined in a field experiment at the University of Wisconsin Agricultural Research Station at Arlington. Four manure treatments, based on two dietary P levels and including a control, were applied to a Ringwood silt loam soil. Phosphorus was determined in runoff from simulated and natural rainfall events.

Dairy manures (feces only, no bedding) with differing P concentrations were hand applied to 2.4-m x 2.4-m plots on May 24, 1999. The site was not tilled in 1999 and residue from the previous year's corn crop remained on the surface. Simulated rain was applied June 1-4, 1999, and again on the same plots on Sept. 30 and Oct. 1, 4 and 5, 1999, after corn silage harvest. Natural runoff was collected from November 1999 to July 2000.

A randomized complete block design with four replications was used in the experiment. The four treatments were: control (no manure, no P addition); low P diet (LPD-56) manure (4.8 g P kg^{-1} manure dry matter) and high P diet (HPD-56) manure (12.8 g P kg^{-1}) applied at 56 wet Mg ha^{-1} to provide 40 and 108 kg P ha^{-1}, respectively; and high P diet manure applied at 21 wet Mg ha^{-1} (HPD-21) to provide the same P addition (40 kg P ha^{-1}) as LPD-56. The LPD-56 and HPD-56 treatments applied equal amounts of manure (same manure rate), but HPD-21 applied less manure than LPD-56 (same P rate).

Feces were collected from lactating Holstein cows involved in a study designed to determine effects of dietary P levels on milk production and reproductive performance. The low P diet group was fed no supplemental P, while the high P diet group had monosodium phosphate added to the low P diet. This resulted in low and high dietary P levels of 3.1 and 4.9 g P kg^{-1}, respectively. The low and high dietary P levels produced manures with average P

concentrations of 4.8 and 12.8 g P kg^{-1}, respectively. These manure P concentrations were used to calculate manure application rates in the field experiments.

Simulated rainfall was applied to experimental treatments. Runoff samples were collected and total runoff volumes were recorded at 30 and 60 minutes. Subsamples of the runoff were analyzed for sediment, dissolved reactive P (DRP), bioavailable P (BAP), and total P (TP) concentrations and loads. P concentration is the amount of P in a given volume of runoff, and P load is the total amount of P leaving (P concentration multiplied by runoff volume).

Corn was planted at a density of 72,000 plants ha^{-1} on all plots following the June rainfall simulation in 1999 and in May 2000. Nitrogen fertilizer was surface applied to all treatments at a rate of 180 kg N ha^{-1} immediately following planting. Glyphosate was used to control weeds. All plants in each plot frame were cut near the base at physiological maturity and weighed, chopped and subsampled to determine plant dry matter yield in 1999. Phosphorus uptake was calculated by multiplying the individual whole plant P concentration by the corresponding dry matter yield.

An analysis of variance was performed for treatment effects on soil moisture, surface residue cover, runoff amount, sediment, DRP, BAP, and TP concentrations and loads in runoff, distilled water extraction, Mehlich III, Bray-Kurtz P-1, ammonium oxalate P, P saturation and silage yield, P concentration, and P uptake. Significant differences among treatment means were evaluated.

Results and Discussion

Manure Characterization — Phosphorus analyses on manures applied in the field experiment showed that all forms of P analyzed were higher in the HPD manure. The addition of monosodium phosphate to achieve the high P diet resulted in more inorganic P in the HPD manure, as shown by the greater than two-fold increase in water-soluble (DI) concentration. BAP concentrations were three times greater and TP concentrations were two times greater in the HPD manure compared with the LPD manure. Water-soluble P and BAP were 40 and 69 percent of TP, respectively, for the HPD manure, and 29 and 43 percent of TP, respectively, for the LPD manure. These results indicate that excessive dietary P supplementation could exacerbate P losses in runoff where these manures are land-applied due to higher TP concentrations and higher proportions of TP in DI and BAP forms. Dry matter content of the high and low P manures was similar.

Site Characteristics — Average time to runoff initiation in the simulated rainfall studies ranged from 5.7 to 7.2 minutes in June and 4.0 to 5.1 minutes in October, and treatments did not significantly affect time to runoff initiation. Treatment effects on soil moisture content in June, seven days following the manure application, differed significantly, ranging from 60 g kg^{-1} for the control to 205 g kg^{-1} for the HPD-56 treatment. The differences in soil moisture content were likely due to water added in the manure and/or decreased soil evaporation from the manured treatments due to their higher surface residue cover. In October, soil moisture content ranged from 110 to 142 g kg^{-1} and was not significantly different among treatments. Soil bulk density measurements taken in October ranged between 1.33 and 1.46 g cm^{-3} and showed no significant differences between treatments. Slope was relatively uniform within the experimental site and did not contribute to treatment effects on P losses.

June — The HPD-56 and HPD-21 treatments increased DRP concentration in runoff relative to the control and LDP-56, and DRP concentration in HPD-56 was nearly 10 times higher than DRP concentration in LPD-56, even though the amount of P applied was only 2.5-fold greater in HPD-56. When the manures were applied at equivalent P rates, DRP concentration in runoff was about four times higher in the HPD-21 than from the LPD-56 treatment. Manure treatment effects on DRP load in runoff were similar to the concentration effects in that loads were significantly higher (≈ 11 times) in the HPD-56 compared with the LPD-56 treatment. The marked differences in runoff DRP concentrations and loads between the LPD-56 and HPD-56 treatments, even when the manures were applied at equal P rates, is likely due to differences in the P composition of the manures.

TP concentrations and loads in runoff in the HPD-56 treatment were significantly higher than in the other manure treatments and the control. The TP load data appear to reflect P contributions from the manure additions and the influence of the manure treatments in controlling sediment loss. Most of the TP load in the control treatment appears to be associated with sediment loss, while a substantial portion of the TP load in the manured treatments is accounted for as DRP.

October — Results from the October simulated rainfall application showed that the higher manure rate treatments (LPD-56 and HPD-56) still had significantly higher surface residue cover than the HPD-21 and control treatments. Runoff amounts and sediment concentrations and loads were substantially higher in October than in June. Higher runoff amounts in fall vs. spring measurements have been reported in previous work, and were attributed to lower infiltration rates due to lower surface residue cover and more extensive soil surface sealing in the fall. The control had significantly higher runoff amounts than both the HPD-56 and the LPD-56 treatments, but the HPD-21 treatment was not significantly different from the other treatments. The control was about two times higher than the high manure rate treatments in sediment concentration and about five times higher in sediment load. This reflects the greater residue cover (as manure) and lower sediment loss in the manure treatments and is similar to the results of two earlier studies.

The DRP concentration in runoff was significantly higher (about four times) in the HPD-56 treatment compared with the LPD-56 and HPD-21 treatments. Manure treatment effects on DRP load in runoff followed a similar trend, except that the HPD-21 treatment was not significantly different from the other treatments. The DRP load in runoff was nearly four times higher in the HPD-56 treatment compared with the LPD-56 treatment.

Treatment effects on BAP concentration were the same as for DRP concentration. Runoff from the HPD-56 treatment was almost three times higher in BAP concentration than from the LPD-56 and HPD-21 treatments, but treatment effects on BAP load were not significant.

In October, treatment effects on TP concentrations and loads were opposite from June. Concentrations and loads of TP in June were higher in the HPD-56 treatment than in the control and other treatments. However, in October, the control had a significantly higher TP load than the LPD-56 and HPD-56 treatments. This probably occurred because TP includes sediment-bound P as well as dissolved P, and sediment losses in October were higher in the control and HPD-21 treatments. The higher sediment losses are consistent with lower surface residue cover in those treatments. Total P loads were about three to five times higher in October than in June except for the HPD-56 treatment. The high June TP load in the HPD-56 treatment was largely due to the relatively high June DRP losses in that treatment. Higher October TP loads in the remaining treatments are consistent with higher runoff volumes and sediment concentrations in October.

Results from the October rainfall simulation show that manures from different dairy diet P concentrations still influenced P concentrations and loads in runoff more than four months after these manures were land applied. This supports the results from the June data indicating that excess P in diets can increase DRP losses runoff when manures from these diets are land applied, and that this effect persists for at least several months. The influence of dietary P levels on TP losses in runoff is complicated by manure treatment effects on runoff volume and sediment loss.

Natural Runoff — Treatment effects on DRP losses in natural runoff support the simulated rainfall results. The cumulative DRP load is consistently higher in the HPD-56 treatment than the LPD-56 treatment and control. Precipitation events varied between 3 and 169 mm and runoff volumes ranged from 0.02 to 10.39 mm. January to March runoff events were primarily associated with snowmelt, and monthly temperatures were above average for this period. May and June had unusually large precipitation amounts, resulting in much larger runoff volumes than in previous rainfall events, and treatment effects on DRP load were accentuated in these cases. There were significant treatment differences in cumulative DRP load at 67 percent of the individual events (12 out of 18 dates). For nine of these dates, the HPD-56 treatment was significantly higher than the LPD-56 treatment and the control; for three of those dates the HPD-56 treatment was similar to the LPD-56 treatment but significantly higher than the control. Overall, the data confirm that higher amounts of DRP are lost from plots amended with high-P diet manure than plots amended with low-P diet manure, and these effects on cumulative DRP loss persist for at least one year.

Soil Analysis — The mean soil test P values for the experimental area indicate a relatively low initial soil P status. At the 0- to 15-cm soil depth, the Bray-Kurtz P-1 soil test P level was 11 mg kg^{-1}, and P additions would be recommended for production of most crops. The October soil test P results show that the HPD-56 treatment usually increased soil test P values at the 0- to 2-cm depth. When the high-P and low-P manures were applied at the same rate, Bray Kurtz P-1 in the high-P treatment (HPD-56) increased more than two-fold compared with the LPD-56 treatment. When the high-P manure was applied at the same P rate as the low-P manure (HPD-21 and LPD-56), Bray Kurtz P-1 tests were not significantly different. This was also true for the distilled water, Mehlich III, and BAP tests, which showed a two- to three-fold increase in the HPD-56 treatment compared with the LPD-56 and HPD-21 treatments.

Corn Analysis — Total aboveground corn dry matter yield and plant P concentration were increased by the manure treatments. These responses are consistent with the application of P to a soil testing low in plant-available P. In addition, total plant P uptake in the manure treatments was significantly greater than in the control. Since a uniform N addition was made to all treatments, these responses are most likely due to P applied in the manures. The possibility of other manure treatment effects on responses cannot be conclusively excluded. Corn yields and total plant P uptake and concentration did not differ among the high- and low-P manure treatments regardless of manure application. This suggests that the lowest P rate added in manure (40 kg P ha^{-1}) supplied adequate P to maximize dry matter yield and plant P concentration.

Conclusions

Phosphorus concentrations in dairy diets influence the forms and amounts of P in manure. Results from this study indicate that when manures from dairy cows fed different dietary P levels are land-applied, a high-P-diet manure contributes more P to runoff than a low-P-diet manure, in both simulated and natural runoff. This effect was seen even when the manures were applied at the same P rate. In June, DRP concentration in runoff from the high-P-diet manure was nearly 10 times higher than the low-P-diet manure when manures were applied at the same manure rate (2.84 vs. 0.30 mg L^{-1}), and four times higher when applied at equivalent P rates (1.18 vs. 0.30 mg L^{-1}). In October, the same comparisons showed that at equivalent manure rates, DRP concentrations were nearly four times higher in the high-P-diet manure treatment (0.89 vs. 0.21 mg L^{-1}) and the same when applied at equivalent P rates (0.21 mg L^{-1}). Dissolved reactive P measurements in natural runoff support the simulated runoff data. These data emphasize the need to avoid excess P supplementation of dairy cow diets to minimize P additions from land-applied manure and reduce P losses to surface runoff and adverse effects on water quality. Regardless of whether an N-based (same manure rate) or P-based (same P rate) manure application strategy is followed, this study indicates that excess P in dairy diets increases the risk of P loss in runoff from land-applied manure. These findings indicate that P in animal diets and its influence on manure P characteristics should be considered when applying the P-index and when implementing nutrient management plans.

Editor's note: Content was adapted from the paper "Dairy Diet Phosphorus Effects on Phosphorus Losses in Runoff From Land-Applied Manure," which was published in Soil Sci. Soc. Am. J. 2002 66, and is courtesy of the authors Angela M. Ebeling, Larry G. Bundy, J. Mark Powell and Todd W. Andraski.

Get a CEU!

This exam is worth 1 CEU in **Nutrient management**. An exam score of 70% or higher will earn CEU credit. The International CCA program has approved self-study CEUs for 20 of the 40 CEUs required in the two-year cycle.

DIRECTIONS

1. Read the self-study article on pages 18-20 carefully.
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.
4. Clip out this self-study examination page, fold and place in envelope.
5. Enclose a check for $10.00 made payable to the American Society of Agronomy, for processing fees. Payment in U.S. funds only.
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 (left hand column) and access the "CCA Advantage" link.

Dairy Diet Phosphorus Effects on Phosphorus Losses in Runoff From Land-Applied Manure

August Self-Study Examination

DETACH HERE

1. Odor, death of fish, and general degradation of surface water is related to:
   [ ] a. depleted P levels.
   [ ] b. depleted O_2 levels.
   [ ] c. depleted H_2O levels.
   [ ] d. depleted NO_3 levels.

2. Based on National Research Council standards, a 1999 study found dietary P to be over-supplemented by:
   [ ] a. 10%.
   [ ] b. 15%.
   [ ] c. 20%.
   [ ] d. 25%.

3. Studies have shown that decreasing dietary P:
   [ ] a. increases P excreted in manure.
   [ ] b. decreases P excreted in manure.
   [ ] c. has no effect on excreted manure.
   [ ] d. increases dry matter content of manure.

4. Phosphorus load is defined as:
   [ ] a. the concentration of P applied to an area.
   [ ] b. P in a given volume of runoff.
   [ ] c. the dietary supplement given to an animal.
   [ ] d. the total amount of P leaving a field.

5. All forms of P analyzed were:
   [ ] a. higher in the control.
   [ ] b. higher in the low P diet (LPD) manure.
   [ ] c. higher in the high P diet (HPD) manure.
   [ ] d. not consistent in the analyses.

6. In June, TP load in the control treatment appeared to be associated with sediment loss, while a substantial portion of the TP load in the manure treatments was accounted for as:
   [ ] a. sediment loss as well.
   [ ] b. LDP.
   [ ] c. DRP.
   [ ] d. BAP.

7. October rainfall simulation showed that manures from different dairy diet P concentrations still influenced P concentration and loads in runoff more than:
   [ ] a. 4 months after these manures were applied.
   [ ] b. 5 months after these manures were applied.
   [ ] c. 6 months after these manures were applied.
   [ ] d. 7 months after these manures were applied.

8. Overall, the data confirm that higher amounts of DRP were lost from plots amended with high-P diet manure than plots amended with low-P diet manure, and these effects on cumulative DRP loss persisted for at least:
   [ ] a. 1 year.
   [ ] b. 2 years.
   [ ] c. 3 years.
   [ ] d. 4 years.

9. Total plant P uptake in the manure treatments was:
   [ ] a. significantly lower than in the control.
   [ ] b. significantly greater than in the control.
   [ ] c. the same as the control.
   [ ] d. the same as the N uptake.

Over

Nutrient Management Test (continued)

10. When land applied, a high-P diet manure:
[ ] a. contributes more P to runoff than a low-P diet manure.
[ ] b. contributes less P to runoff than a low-P diet manure.
[ ] c. contributes more P to runoff only in simulated runoff.
[ ] d. decreases the risk of P runoff.

SELF-STUDY EXAM REGISTRATION FORM

Name: _____

Address: _____

City: _____ State/Province: _____ Zip: _____

CCA Certification #: _____

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

Expiration Date _____ Name on Card: _____

A $2 processing fee will be added to all credit card charges, or enclose $10 check payable to American Society of Agronomy.

X _____

Signature of Registrant as it appears on Code of Ethics

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

This exam issued August 2003 expires August 2006.

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: _____