

Coalition for Urban Rural Environmental Stewardship
PROJECT PLAN / RESEARCH GRANT PROPOSAL
CDFA FERTILIZER RESEARCH & EDUCATION PROGRAM

A. Cover Page

1. Project Title

Train the Trainer: A Nitrogen Management Training Program for Growers

2. Project Leaders

Parry Klassen: Project Director/Principle Investigator (PI), Coalition for Urban Rural Environmental Stewardship (CURES), 1480 Drew Ave. #130, Davis, CA 95618, 559-288-8125, pklassen@unwiredbb.com

Terry Prichard: Co-PI, University of California at Davis Department Land, Air, and Water Resources (LAWR), Specialist Emeritus, 1110 PES, Davis, CA 95616, 209-481-6839, tprichard@ucdavis.edu

3. Cooperators: None

4. Supporters

Alan Reynolds: Board Chairman, East San Joaquin Water Quality Coalition, 1201 L Street, Modesto, CA, 209-394-6200, alan.reynolds@ejgallo.com

Joseph McGahan: Executive Director, Westside San Joaquin River Watershed Coalition, 559-582-9237, jmcgahan@summerseng.com

Bruce Houdesheldt: Executive Director, Sacramento Valley Water Quality Coalition, 916-442-8333, bruceh@norcalwater.org

Michael Wackman: Executive Director, San Joaquin County & Delta Water Quality Coalition, 916-684-9359, michaelkw@msn.com

Parry Klassen: Chair, Management Practices Evaluation Program Group Coordinating Committee (MPEP GCC), 1201 L Street, Modesto, CA, 559-288-8125, pklassen@unwiredbb.com

Adam Laputz: Assistant Executive Officer, Central Valley Regional Water Quality Control Board, 11020 Sun Center Drive, #200, Rancho Cordova, CA 95670, 916-464-4726, Adam.Laputz@waterboards.ca.gov

Renee Pinel: President and CEO, Western Plant Health Association, 4460 Duckhorn Drive, Suite A, Sacramento, CA, 95834, 916-574-9744, reneep@healthyplants.org

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Coalition for Urban Rural Environmental Stewardship
PROJECT PLAN / RESEARCH GRANT PROPOSAL
CDFA FERTILIZER RESEARCH & EDUCATION PROGRAM

5. CDFA Funding Request Amount/Other Funding

Funding requested from California Department of Food and Agriculture, Fertilizer Research and Education Program: \$71,212 (2015/2016), \$40,455 (2017), and \$27,901 (2018) for a total of \$139,568.00. The budget begins in July 2015 and ends in June 2018.

6. Agreement Manager

Parry Klassen: Coalition for Urban Rural Environmental Stewardship, 559-288-8125, pklassen@unwiredbb.com, 1480 Drew Ave. #130, Davis, CA 95618

B. Executive Summary

1. Problem

Nitrate is the most common contaminant in Central Valley groundwater and elevated levels are attributed primarily to leaching of nitrogen fertilizers past the root zone into aquifers. Growers who belong to Central Valley Water Quality Coalitions are under new requirements per the Irrigated Lands Regulatory Program (ILRP) to keep “on farm” a Nitrogen Management Plan (NMP) to track nitrogen fertilizer applications. As required by the waste discharge requirement (WDR) the NMP for lands determined to be highly vulnerable to nitrate leaching must be certified by 1) Certified Crop Advisor (CCA) with a Nitrogen Plan Certification, 2) Certified Professional Agronomist or Soil Scientist, or 3) Technical Service Provider certified in nutrient management by NRCS. A program to ensure adequate numbers of NMP certifiers is underway by University of California (UC) and California Department of food and Agriculture (CDFA). The current total of CCAs in California is near 500 with fewer in the Central Valley. There are approximately 25,000 landowners/operators, with nearly 7 million acres of irrigated land in the Central Valley are affected by the new ILRP requirements to improve nitrogen application practices to protect groundwater. NMPs will require certification for lands in high vulnerability areas beginning in 2016. . The lack of adequate numbers of NMP certifiers is already a concern to both growers and the technical community. . The WDR provides for another method of certification: growers wishing to complete their own plans would obtain certification by participation in a training program that approved by the Central Valley Regional Water Quality Control Board Executive Officer. Such a program is under development by UC and CDFA. That program relies on the training of qualified individuals (trainers) to then present the UC developed materials to groups of growers. Upon successful completion of the course a grower would be able to certify the NMP for lands that they farm.

The necessary but undefined portion of the scheme is the training of the “trainers” and program management in terms of personnel and program quality control. This project will develop a cadre of trainers from the qualified NMP certifiers; provide the necessary training and material developed by UC to the trainers. Additionally, the project will manage the interaction between those groups requesting training and the training cadre as well as measuring trainer effectiveness to ensure program quality control.

2. Objectives, Approach, and Evaluation

Objectives: Implement a three-year pilot project to develop and manage a system for providing a pool of trainers (agronomy experts in nitrogen fertilization) who would in turn provide growers the training needed to self-certify Nitrogen Management Plans (NMP’s) for lands they farm.

Coalition for Urban Rural Environmental Stewardship
PROJECT PLAN / RESEARCH GRANT PROPOSAL
CDFA FERTILIZER RESEARCH & EDUCATION PROGRAM

Objective 1) Conduct outreach to attract potential trainers for the grower self-certification trainings.

Objective 2) Organize and conduct the Train-the trainer sessions using the educational materials developed by UC for the grower self-certification trainings. Trainer would be considered qualified as a trainer for grower certification program.

Objective 3) Manage the interaction between those requesting a trainer for a grower training session and the trainer.

Objective 4) Provide grower testing, keep records of attendance, successful completion and conduct trainer evaluation.

Objective 5) Review and certify both content and trainers to conduct this activity.

Approach:

1) Outreach to attract potential trainer candidates will be conducted through mailings and emails to Certified Crop Advisor contact lists to attract potential trainers for the grower self-certification trainings.

2) Train-the trainer sessions will be conducted with the potential trainers using the educational materials developed by UC for the grower self-certification trainings. Upon successful completion of the train-the trainer sessions, a trainer would be considered qualified as a trainer for the grower certification program.

3) This project would manage the interaction between those requesting a trainer for a grower training session—i.e. a coalition, grower group, private business, etc.—and the trainer. It would work like a “speaker’s bureau” where a request comes in and a list of trainers with the specific qualifications is provided. The group sponsoring the training would select the trainer.

4) The water quality coalitions would be the partner with each of the groups requesting a grower self-certification session. They, through this project, would provide grower testing, keep records of attendance, successful completion and conduct trainer evaluation through post session grower program evaluation.

5) After the initial grower self-certification, additional hours of continuing education is required. This project would review and certify both content and trainers to conduct this activity.

Evaluation Criteria:

The primary metric of success is meeting the need of grower educational needs in order to self-certify the NMP for the grower’s lands. The first concern is to scale the program up fast enough to meet the demand. Secondly, is to deliver a quality program. An evaluation of the overall program as well as the quality of the trainer will be solicited at each grower training by using attendee surveys.

3. Audience

The audience for the train the trainer efforts will be the Certified Crop Advisors who are eligible to perform the training. The final audience, once the CCA is trained, will be the growers who are seeking to certify their own nitrogen management plan. The information taught by the trained CCAs will help guide the selection of practices used by members of Central Valley Irrigated Watershed Coalitions who are required to use nitrogen management practices known to minimize contamination of groundwater with nitrates and be compliant with groundwater protection regulations.

Coalition for Urban Rural Environmental Stewardship
PROJECT PLAN / RESEARCH GRANT PROPOSAL
CDFA FERTILIZER RESEARCH & EDUCATION PROGRAM

C. Justification

1. Problem

Elevated levels of nitrate present in groundwater in Central Valley locations are being attributed, in part, to inputs from farming practices. The Central Valley Water Board estimates approximately three million acres of irrigated lands overlay groundwater aquifers that have high levels of nitrogen or are vulnerable to nitrate contamination. In the Central Valley, the Regional Water Board has designated areas that require action by growers and water quality coalitions to reduce inputs of nitrate to groundwater. The Irrigated Lands Regulatory Program (ILRP) now requires Coalition Members to keep “on farm” a Nitrogen Management Plan (NMP) to track nitrogen fertilizer applications. Approximately 25,000 landowners/operators, with a total of nearly 7 million acres of land in the Central Valley are affected by the new ILRP requirements to improve nutrient and irrigation application practices to protect groundwater. Similar groundwater issues are problematic in other farming regions of California as well. A key component of the NMP is reporting how much nitrogen a crop “consumes” during the growing season. Determining crop consumption is one of several charges of the Management Practices Evaluation Program (MPEP) that the Northern Central Valley coalitions are cooperatively implementing. The objective of the NMP and the MPEP is to better manage and understand the amount of nitrate that is leached to groundwater by implementing Best Management Practices while also assuring that these processes are indeed effective. This project initiates and administers a grower self-certification program that will provide qualified trainers to the grower self-certification sessions ultimately increasing the understanding of nitrogen behavior, movement and distribution from nitrogen fertilizers as it moves through the soil down to groundwater. This knowledge should increase agricultural nitrogen use efficiency and reduce nitrate leaching potential.

2. FREP Mission and Research Priorities

This project will promote environmentally safe and agronomically sound use of nitrate fertilizers. The 2015 Research Priority addressed is “Nitrogen Management Training Program for Growers.” The Waste Discharge Requirements General Orders for the Central Valley allows growers to self-certify their own nutrient management plans if they attend a California Department of Food and Agriculture or other Executive Officer approved training program. CDFA has taken the lead on developing a grower training program based on the Certified Crop Advisor training funded by FREP. Additional funds are required to further develop the grower education component.

3. Impact

The research-based information delivered to growers by this project will support FREP’s goals to advance the environmentally safe and agronomically sound use of nutrients and the reduction of agricultural contributions of nitrate to groundwater in the Central Valley and agricultural regions throughout California. The BMP recommendations will be vital to approximately 33,000 landowners/operators, with a total of nearly 7 million acres of land in the Central Valley are affected by the new ILRP requirements to improve nutrient and irrigation application practices for reducing salt and nitrate discharges to ground and surface water. This project will also ensure the timely implementation of a training program for certifiers who can train growers how to complete the new mandatory NMPs. These trainers and the growers they train will advance the knowledge of proper nitrogen stewardship as attention by the public and policymakers continue

Coalition for Urban Rural Environmental Stewardship
PROJECT PLAN / RESEARCH GRANT PROPOSAL
CDFA FERTILIZER RESEARCH & EDUCATION PROGRAM

to focus on the issue of nitrogen in groundwater.

4. Long-Term Solutions

In the long-term, implementation of the grower NMP self-certification program will contribute to measureable reductions in the likelihood of nitrates from fertilizer entering groundwater from farming practices in the Central Valley. This will reduce the regulatory compliance costs of all users of water, not just agricultural. Additionally, the reduction of impacts to groundwater reduces treatment costs and may allow expanded use of lower cost groundwater in some areas for both agricultural and domestic uses.

5. Related Research

The requirement to have a certified agronomist sign off on nitrogen management plans for growers of irrigated cropland is a new concept and approach in California. While growers who apply pesticides must have an applicator permit issued by the County Agricultural Commissioner, there is no requirement for a licensed Pest Control Advisor to perform the training. This project would be a collaboration between CURES, which has extensive experience in developing and managing outreach program to growers, and Terry Prichard, a UC extension specialist, who will implement the train the trainer component of the program. CURES, in collaboration with academic, commodity, professional, regulatory and non-profit organizations, has been instrumental in testing the efficacy of BMPs for improving water quality and facilitating widespread implementation and adoption of BMPs and IPM. CURES has produced a variety of publications on BMPs for reducing off-site movement of sediments, nutrients and pesticides to surface water, irrigation management practices and practices for supporting healthy populations of pollinators, and assembled region-specific collections of these technical bulletins in binders entitled “BMP Handbook,” with distribution to approximately 7,500 growers, PCAs, and agriculture organizations in the Central Valley. The Handbooks contain publications on surface water quality protection practices such sediment ponds, vegetated ditches, PAM, irrigation scheduling, crop specific guidelines for BMP selection, single and multiple field implementations, and reduced risk treatment options. The BMP publications and the results of water quality related BMP studies are posted on CURES website: www.curesworks.org. Additionally by utilizing a group of experts participating in the MPEP CCG the contribution will be from a broader base and in the process educate those who are less likely to be knowledgeable about nitrate research and options in the agricultural community.

CURES project leader, Parry Klassen personally has extensive experience in production agriculture. Klassen also serves as Executive Director of the East San Joaquin Water Quality Coalition. This organization represents more than 4000 landowners in Madera, Merced and Stanislaus counties under the Irrigated Lands Regulatory Program. Among other responsibilities, Klassen manages the grower outreach and education programs and also activity participates in CV-Salts and the MPEP CCG on behalf of the coalition.

Terry Prichard, the project’s co-PI has more than thirty five years of experience supporting California growers as a Water Management Specialist at UC Davis through applied research and education programs with areas of emphasis including irrigation management and off-site movement of agricultural chemicals. Recent projects include Controlling Offsite Movement of Agricultural Chemical Residues: Winegrapes UCANR 8556, Tomato UCANR 8457 and Alfalfa

Coalition for Urban Rural Environmental Stewardship
PROJECT PLAN / RESEARCH GRANT PROPOSAL
CDFA FERTILIZER RESEARCH & EDUCATION PROGRAM
UCANR 8495. Groundwater Protection Areas Web Site.

6. Contribution to Knowledge Base

This project will not develop new knowledge or information but instead will serve as a conduit and vehicle to transfer the latest information on efficient nitrogen fertilizer applications and the practices that can minimize or prevent movement of nitrates to groundwater. The recipients of the information will be the trainers who perform the grower certifications and also the growers who are the recipients of the training.

7. Grower Use

The nitrogen practices promoted in this project will be considered characteristic of what the “early adopters” are currently using. Individually most of the practices are already being used widely but not often simultaneously in a field. For instance, drip/micro irrigation is widely used in the Central Valley. But drip irrigation, tissue/leaf sampling, split applications of nitrogen, pre and post crop soil testing, soil moisture sensors, and other newer practices, may not all be used at once in a field. Growers who receive this training will be told about the “best” practices for the various cropping conditions, steps that can be taken to minimize/eliminate nitrate movement to groundwater and, presumably, increased production will cover the cost. Once data is developed on the effectiveness of these practices when used in combination, incentives for growers to adopt them will also be motivated by pressure currently exerted by regulatory agencies to protect groundwater resources. Information will also be provided to growers on the costs of the practices and potential yield or quality benefits that might be expected by their adoption.

D. Objectives

Objective 1) Conduct outreach to attract potential trainers for the grower self-certification trainings.

Objective 2) Organize and conduct Train-the trainer sessions using the educational materials developed by UC for the grower self-certification trainings. Trainer would be considered qualified as a trainer for grower certification program.

Objective 3) Manage the interaction between those requesting a trainer for a grower training session and the trainer.

Objective 4) Provide grower testing, keep records of attendance, successful completion and conduct trainer evaluation.

Objective 5) Review and certify both content and trainers to conduct this activity.

E. Work Plans and Methods (for multi-year projects, include a work plan for each year)

1. Work Plan

1. Trainer Outreach Program. The pool of trainers includes a small number of Certified Professionals: Certified Crop Advisors (CCAs) with a Nitrogen Plan Certification, or a Certified Professional Agronomist or Soil Scientist, 2015

- a. Attract qualified trainer candidates.
 - Advertisements in print media for interested individuals.
 - Prepare news articles for agricultural industry publications highlighting the project. As example: CAPCA Advisor Magazine

Coalition for Urban Rural Environmental Stewardship
PROJECT PLAN / RESEARCH GRANT PROPOSAL
CDFA FERTILIZER RESEARCH & EDUCATION PROGRAM

- Personal contact with fertilizer sales companies who employ CCA's
- The Coalitions, in consultation with CDFA, will review and approve the trainer candidates with appropriate qualifications.

Task Work Product: Outreach materials; List of trainees; January 2016

2. Conduct Train-the-Trainer Sessions. The instructional materials developed by UC will be used in the train-the-trainer sessions. The materials will be identical to those to be used in the grower certification sessions. However, more time will be allowed for questions and answer periods. 2015 - 2017

- a. Sessions will be conducted in centralized areas within the Coalition's areas. The number of trainers in each session will depend on the total number of participants.
- b. Trainers will be tested using the same type of test that growers participants will need to pass to become able to certify the NMP. Trainers must pass the test to become certified.

Task Work Product: Conduct Train-the Trainer Sessions: January, 2016

3. Manage the interaction between those requesting a trainer for a grower training session—i.e. a coalition, grower group etc.—and the trainer. 2015 - 2018

- a. A list will be maintained of qualified trainers, their specialties, home base location, and when available previous training grower evaluations.
- b. The list will be supplied upon request of any organization/entity partnering with the coalitions in sponsoring a grower training session.
- c. Training would be performed.
- d. The coalitions will, in the partnership, assist any organization/entity with organizational capabilities for sponsoring a grower session.
- e. The coalitions, through this project would provide grower testing, keep records of attendance, successful completion and conduct trainer evaluation through post session grower program evaluation. On site quality control evaluations would also be conducted.

Task Work Product: Schedule of events, assigned trainers: Quarterly beginning January 2016

4. Manage and coordinate the self-certification requirement of continuing education. 2015 - 2018

- a. The Coalitions through this project would develop and or certify continuing educational activities which would qualify for the NMP self-certification program.
- b. The coalitions through this project would maintain attendance of such sessions.

Task Work Product: Coordinate sessions for growers CE training, event schedules, List of certified growers/ attendees; Quarterly, beginning January 2016.

2. **Methods** *Not applicable*

3. **Experimental Site** *Not applicable*

Coalition for Urban Rural Environmental Stewardship
PROJECT PLAN / RESEARCH GRANT PROPOSAL
CDFA FERTILIZER RESEARCH & EDUCATION PROGRAM

F. Project Management, Evaluation, and Outreach

1. Management

The project director and principal investigator, Parry Klassen, is executive director of the Coalition for Urban Rural Environmental Stewardship (CURES), a non-profit, 501c3. Mr. Klassen has a B.S. in agricultural communication from California State University, Fresno, and is a farmer in Fresno County. Mr. Klassen has been closely involved with the formation of Central Valley watershed coalitions since 2002 with CURES and as coalition board chairman (East San Joaquin Water Quality Coalition). CURES, in collaboration with academic, commodity, professional, regulatory and non-profit organizations, has been instrumental in testing the efficacy of BMPs for improving water quality and facilitating widespread implementation and adoption of BMPs and IPM. Parry Klassen and CURES staff will manage the project, facilitate communication and collaboration among the cooperating entities through conference calls and team meetings, ensure that the project goals and objectives are being addressed throughout the project, oversee the field research, deliver outreach presentations, work with the grower cooperator to assist with management practice implementation and study logistics coordination, and gather and compile all supporting materials from collaborators and subcontractors to submit reports, invoices and deliverables to the FREP Grant Manager on time and on budget.

Terry Prichard, the project's co-PI has more than thirty five years of experience supporting California growers as a Water Management Specialist at UC Davis through applied research and education programs with areas of emphasis including irrigation management and off-site movement of agricultural chemicals. Terry Prichard will assist Mr. Klassen in managing the Work Plan tasks to achieve the project objectives. Work Plan Progress reports will be supplied to Mr. Klassen for incorporation into interim and final reports.

2. Evaluation

The primary metric of success is meeting the need of grower educational needs in order to self-certify the NMP for the grower's lands. The first concern is to scale the program up fast enough to meet the demand. Secondly, is to deliver a quality program, An evaluation of the overall program as well as the quality of the trainer will be solicited at each grower training by using attendee surveys.

3. Outreach

Essentially, this entire project is one of outreach and education of growers. Activities beyond train the trainer and grower certification activities described above include:

- Articles in coalition newsletters, trade publications and popular agricultural media.
- Presentation to growers soliciting their involvement in seeking self-certification of the NMP on the growers lands.

G. Budget Narrative

The budget attached in the budget template is based on funds being available as of July 2015. The funds included in the attached budget template include 2015 funds in the 2016 estimate.

Coalition for Urban Rural Environmental Stewardship
 PROJECT PLAN / RESEARCH GRANT PROPOSAL
 CDFA FERTILIZER RESEARCH & EDUCATION PROGRAM

a. Personnel Expenses

CURES staff are listed below including the number of hours estimated to work on the project per year. CURES staff will manage contracts, invoicing and progress reports and ensure that subcontractors remain on schedule and within budget. CURES includes a 20% benefit calculation to the budget (10% benefits and 10% overhead). Staff time is expected to range from 1% to 5% of full time salaries.

b. Operating Expenses

Operating Expense	Total Budget Amount	Explanation
Supplies	\$ 4,500.00	Reproduction of training materials for meetings
Equipment	\$ 0.00	
Travel	\$ 4,700.00	CURES/consultant travel to training meetings
Professional/Consultant Services		
Terry Prichard	\$ 30,000.00	Consultant cost for providing training of CCAs/agronomists
Payment to Individual Certified Trainers	\$ 37,500.00	Payment for CCAs/agronomists to perform training of growers at events in Central Valley
Other Expenses	\$ 7,500.00	Costs for renting facilities
Total	\$ 84,200.00	

Supplies: Supplies include training materials for the meetings. Training materials are estimated to be \$150 per meeting.

Equipment: None

Travel: Travel includes mileage reimbursement (\$0.56 per mile) and lodging/meals for CURES staff to attend meetings as needed. In 2015/2016, \$1,500 is budgeted for travel, \$2,100 in 2017 and \$1,100 in 2018.

Professional/Consultant Services:

CURES will be subcontracting with Terry Prichard and the Certified Crop Advisors who perform the grower certification training. Terry Prichard's services include all the work tasks and administering meetings, travel to/from meetings and coordination with CURES regarding meeting agendas and facility reservations. Trainers would be paid for conducting grower trainings on a per meeting basis. Consultant fees equal \$30,000 over three years.

Other Expenses: CURES will reserve facilities for meetings averaging \$100 per meeting. Total facility costs is budgeted at \$7,500 over three years.

c. Other Funding Sources

No match funding available

H. Budget Template (see attached excel spreadsheet)