

**Nitrogen Research and Groundwater Management Education Program
Cover Page**

Project Leaders:

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Funding Request:

- A) \$15,000/year for year 1
\$15,000/year for year 2
- B) \$31,900/year by WPHA over 2 years
- C) WPHA will be funding this program @ \$31,900 per year to contribute and minimize FREP costs to the project.

B. Executive Summary

Problem

The Central Valley Regional Water Board has indicated its intention to promulgate regulations for the management of nutrient impacts on groundwater. Of particular interest is the role of nitrogen fertilizer in groundwater. Growers and members of the plant nutrient industry continue to be under pressure to demonstrate sound decision making in their nutrient application decisions. Seminars and conferences have proven to be effective in delivering new Best Management Practices research. However; despite the need to develop consensus on this issue, the fertilizer industry and growers have not come together to effectively identify what is taking place in the field, or to coalesce on what additional steps can or should be taken in an environmentally safe and agronomically sound program for commercial agriculture, to satisfy concerns of the regulatory community with interests in water quality protection.

The objective of this 2-year project would be to bring all parties together using WPHA as a respected arbiter between the fertilizer industry, grower groups, and other impacted organizations; to identify practices in place & validated research; to communicate this information within the groups involved and with other regulatory agencies, so future regulations can be developed using sound information relevant to commercial agriculture.

Project Objectives

The overall objective of this project is to identify and document all research available that can be utilized as an acceptable Best Management Practice (BMP) to regulatory agencies with water quality management authority. The ultimate goal is to receive approval for those BMPs from water quality authorities, in particular the Central Valley Regional Water Quality Control Board (CVRWQCB), for use by agriculture.

The objective will be achieved through three parts. First, WPHA will undertake the identification of agronomically sound nitrogen research projects related to the use of nitrogen fertilizer field applications or BMPs. WPHA will outreach to organizations like the California Department of Agriculture (CDFA), The Fertilizer Institute (TFI), and the International Plant Nutrient Institute (IPNI), and the Fluid Fertilizer Institute (FFI), to identify possible research projects.

Second, through WPHA's Soil Improvement Committee, we will review research and identify those projects and BMPs, and identify those projects that may be acceptable to the CVRWQCB. WPHA will utilize the parameters set by the CVRWQCB, including whether the research or BMP is scientifically sound, whether it will contribute to improved water quality or less impact to water quality, and if it is practical for use by growers. WPHA will facilitate conversations with grower groups and other interested groups to determine if the research and BMPs is applicable to commodities impacted by fertilizer water quality directives. WPHA has held initial discussions with commodity

groups, who have indicated they would be open to finally participating in this type of program if WPHA is directing it.

Finally, WPHA will develop a fertilizer and water quality BMP plan or report that growers will utilize, and present this to water quality agencies BMP programs to be approved for use by growers. WPHA will conduct the advocacy of these BMPs to water agencies like the CVRWQCB on the validity and acceptability of the BMPS. These approved BMP would ultimately be utilized by the water agencies for upcoming regulations that will impact growers' future use of fertilizers.

Audience

There are two main audiences for this project. The first audience is the regulatory agencies involved in water quality protection. The focus of this project is to develop a fertilizer BMP plan or report that is acceptable to water quality agencies, in particular the CVWQCB; however, will likely be applicable to the Central Coast Water Quality Control Board's (CCRQWCB) proposed regulations, other regional water boards considering regulations in wake of the Central Valley and Central Coast proposed actions, and the State Water Board that will be reviewing regional board actions.

The second audience is the grower community. Growers will ultimately have the responsibility to implement use and reporting guidelines mandated by the regional water boards. WPHA has the ability to interact with the grower community to explain BMPs to them and to engage them in developing a BMP plan or report that is practical for their use.

C. Justification

Problem

The CVRWQCB is required to finalize nutrient water quality regulations within the next two years. The Fertilizer Research & Education Program (FREP), as well as other interested groups have funded and developed extensive research projects that minimize or reduce the impact of nitrogen fertilizers on the environment. Discussions on the need to identify and collate this information for use by growers, the fertilizer industry, and regulatory agencies have been under way for several years. Unfortunately, to date, the identification and collation of this research still has not taken place. We believe that at this time, WPHA is best suited to undertake this effort and coordinate any developed information with other interested groups to develop a BMP package acceptable to water agencies.

CDFA/FREP Goals

FREP's clear goal is to increase the environmentally safe and agronomically sound use of fertilizers. This project is directly designed to identify nitrogen use research developed under FREP funding, determine which of these projects meet the requirements of the CVRWQCB, disseminate the research information to impacted groups like growers, and have these projects approved by additional agencies for their use by additional regulatory agencies.

Impact

This project if approved will have a major impact on the use of nitrogen fertilizers by growers in California. As mentioned earlier, the CCRWQCB is also promulgating regulations, and is amending its implementation timeline for regulations to be consistent with regulations that the Central Valley develops. All water quality agencies have indicated that growers operating in nitrogen impacted areas will have to adopt use plans or reports that demonstrate practices that limit further impacts to water quality. These practices must be approved as credible and scientifically sound to receive approval by boards. If this project is undertaken, it is likely that only projects proposed by the staffs of water agency boards, or by groups like environmental coalitions, will be approved. We believe this proposal is the only effort currently being proposed to develop farm water use plans for conventional agriculture that will meet the mandated regulatory deadlines of CVRWQCB.

Long-term Solutions

The intent of the project is to provide a long-term solution for the acceptance and use of scientifically developed BMPs. The fertilizer industry in California has over the implementation timeline of FREP developed an extensive and credible number of BMPs for nitrogen fertilizer use. However, it has always been a challenge for FREP to document the extent that growers are aware of these BMPs and utilize them. This project will provide a long-term solution to this problem, as growers will be limited in application practices based on whether a BMP is approved by the water boards. FREP research is the most viable form of research that the water boards will likely have for scientifically demonstrated research on nutrients and water quality impacts. Even longer term, we hope this will be a stepping stone to achieve the water boards deferring approval of BMPs to CDFA through the demonstration of the viability of this grant effort.

Related Research

This project is designed to finally identify already developed BMP research of FREP, as well as other university or private research in the area of nitrogen fertilizer and water quality impact. Research that will be utilized includes all research that involves nitrogen use and application that is agronomically sound and contains a component that demonstrates that the use of BMP will contribute to lessening the environmental impact to water quality, or improving water quality. Research that will be identified for possible use includes the overall use of nitrogen fertilizers, nitrogen and water quality research aspects, and specific research related to California crops, including, for example, tree nuts, stone fruit trees, grapes, cotton, alfalfa, and rice, as examples. Additionally, we will outreach to other credible organizations as mentioned under “Project Objectives” for research that can be identified. The goal would be to develop as wide a set of scientifically sound options for growers to utilize as possible.

Contribution to Knowledge Base

The CVRWQCB is ultimately responsible for approving the adoption of “Farm Water Use Plans” in relation to the use of nitrogen fertilizers or other nutrients in upcoming water quality regulations. The CVRWQCB staff has no knowledge base in this area.

The only directive thus far given by the CVRWQCB is that they are willing to consider BMPs, but they must be able to demonstrate a water quality and not just an agronomic component, and the water quality component must be scientifically credible. In addition, agricultural groups have expressed great concern that they do not have the scientific knowledge base to identify BMPs they are using that meet the water quality component of the board mandates, in addition to the agronomic component. WPHA will work directly with both growers and the water board staff and provide BMPs to growers and the water boards based on the scientific criteria required. By working with both sides, the project will provide the parameters or template for approval of future BMPs based on the knowledge of participants of how and where credible BMPs are developed and vetted.

Grower Use

Growers will be one of the two major impacted groups of this effort. As mentioned above, growers have expressed concern that they do not themselves have the scientific knowledge to develop or identify the needed BMPs. They also do not have the knowledge of where or who may have this type of research developed. This project will bring the grower community into the BMP process. First it will provide them with research and practices that would be beneficial to their use, and second, it will help them identify areas that need more research, thereby helping FREP identify future research areas.

D. Objectives

The objective of this project is for WPHA to identify BMP research that would be applicable to use in “nutrient farm water use plan” in the area of nitrogen use management, that will meet the requirements of the CVRWQCB and receive its approval. To establish this, the project proposals:

- 1) Introduce and receive approval from the CVRWQCB to work with their staff in the development of an “agricultural submission of BMPs” to be utilized for upcoming water quality regulations. Establish CVRWQCB buy-in by educating staff on the parameters from which research will be considered.
- 2) Identify FREP research that includes a component that addresses water quality protection for BMPs that address nitrogen application, irrigation methods, and for specific California crops, including tree nuts, stone fruit trees, grapes, cotton, alfalfa, rice, and others.
- 3) Identify other BMP research from outside entities like TFI, IPNI, and FFI, that includes a component that addresses water quality protection for BMPs that address nitrogen application, irrigation methods, and for specific California crops, including tree nuts, stone fruit trees, grapes, cotton, alfalfa, rice, and others.
- 4) Engage agricultural associations via group meetings or one-on-one meetings on the identified research to assure grower support and to assure that BMPs identified are practical from an agronomic use standpoint.
- 5) Develop an actual “nutrient farm water use plan” that contains BMPs with growers and water agency staff, which can be submitted for approval to the CVRWQCB.

The objectives in outreach is to provide this information to as wide an impacted audience as possible, and to assure BMP projects identified through the FREP project do not present unidentified costs or impacts to growers. It is also to facilitate discussion with the CVRWQCB, industry, and grower groups via scientifically sound programs that meet the needs of grower groups and the regional water board. The project will as a result lessen pressure and frustration of all sides by providing a solution to an identified problem at a minimal cost to all involved. The ultimate objective through this effort and outreach is this process will establish a basis from which water boards and their staffs feel their regulatory requirements are recognized and maintained, and future approvals of nutrient BMPs can be deferred to CDFR for approval.

E. Workplans & Methods

Workplan – Year One

This two-year project is to identify relevant nitrogen research and BMP education information and to gain CVWRQCB approval for their use in “farm water use plans”.

- 1) WPHA will begin outreach efforts with the CVRWQCB and staff for acceptance of an agricultural submittal of a “nutrient farm water use plan”. WPHA will establish with the board staff components that they require to meet their regulatory requirements.
- 2) WPHA will work with FREP, and outside organizations to identify nitrogen research and BMPs.
- 3) WPHA will through these organizations and through our own Soil Improvement Committee, identify which research and BMPs have a water protection component that meets board staff requirements to it for consideration for submission to the water board.
- 4) WPHA will begin outreach efforts with commodity groups to identify practices identified as beneficial and especially related to specific commodities to include in approval package.

All aspects of this project will take place on an ongoing basis. Interim task projects related to identification of research and BMPs will be the development of ongoing discussions with CVRWQCB staff. Additional interim task projects will be the reporting of nitrogen research and BMPs identified, and work with outside organizations and water board staff. Project managers will provide interim reports on the status of the project at the end of six months and the end of the first year.

Workplan – Year 2

This two-year project is to identify relevant nitrogen research and BMP education information and to gain CVWRQCB approval for their use in “nutrient farm water use plans”.

- 1) WPHA will continue outreach efforts with the CVRWQCB and staff for acceptance of an agricultural submittal of a “farm water use plans”.
- 2) WPHA will continue work with FREP, and outside organizations to identify nitrogen research and BMPs.
- 3) WPHA will through these organizations and through our own Soil Improvement Committee, identify which research and BMPs have a water protection component that meets board staff requirements to it for consideration for submission to the water board.
- 4) WPHA will continue outreach efforts with commodity groups to identify practices identified as beneficial and especially related to specific commodities to include in approval package.
- 5) WPHA will develop an actual “nutrient farm water use plan” that contains BMPs for growers and that meets water agency staff requirements that will be submitted for approval to the CVRWQCB.

All aspects of this project will take place on an ongoing basis. Final task projects will be the addition of the creation of an actual “farm water use plan” that can be utilized by growers and to be approved by the water board. Final task project will be the reporting of components developed in year two and the actual “nutrient farm water use plan”. Project leaders will provide an interim report at the end of six months and a final report on status of project at the end of the second year.

Methods

WPHA will outreach to all known parties who have been developing information in this area for use of their research. WPHA staff will personally be meeting with groups to discuss the information needed and how these groups can interact in the process. WPHA staff will also personally interact with water board staffs and administration as well as meeting with grower groups in the development and approval of the “nutrient farm water use plan” to be approved by the CVRWQCB.

F. Project Management, Evaluation, and Outreach

Management

The role of the project leaders is to identify groups that have been developing nutrient use research and BMPs, and to coordinate with those groups in collecting that information. The project leaders will also interact with these organizations in establishing what research meets the requirements of upcoming water quality regulation programs, and how information can best be integrated in a practical program.

The project leaders have extensive experience in this type of effort. Renee Pinel has spent over 18 years working with regulatory agencies and production agriculture groups in developing programs that meet the needs of all involved, as well as already working closely with the CVRWQCB and staff on overall requirements of the upcoming “Long-Term Irrigated Lands Program”. Henry Buckwalter, is an agronomist with extensive

background and expertise in evaluation of scientific analysis and will be working with the WPHA Soil Improvement Committee on identification of scientifically sound BMPs, and with water board staff on explaining the validity of proposed BMPs.

Outreach

Outreach will include efforts to generate all available scientifically credible research and BMPs from industry funded organizations across the country. WPHA anticipates meeting with industry organizations to assure their buy-in of the process, and develop additional scientific contributions for the project. In addition, outreach activities of this project will be to the CVRWQCB and its staff on recognizing and accepting already developed nitrogen research and BMPs for grower use. Once the identification of already existing BMPs begins, we expect this outreach to take place on a monthly basis. Outreach will also take place with grower groups on the validity of research identified, their analysis of any unidentified impacts from the BMP and their commitment for support for inclusion by the CVRWQCB. WPHA will work directly with specific commodity groups in the Central Valley who will be at risk because of upcoming regulations, as well as outreaching to groups from other parts of the state who may be impacted by regulations developed by other regional boards based on the CVRWQCBs program.