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	Last Name	First Name	Email Address	1) List your top Grand Challenge or Big Issue for agricultural water quantity or agricultural water quality for an application to the AFRI Water competitive grant program.	2) List specific ideas, questions, or topics related to agricultural water quantity or agricultural water quality that should be addressed in an application to the AFRI Water competitive grant program.	3) List your expertise in research, teaching, and extension that you would like to contribute to an application to the AFRI Water competitive grant program.	Department
1	Admiraal	David	dadmiraal2@unl.edu	Simultaneous increase in water needed for energy, agriculture and environment	Accurate flow measurement Optimizing utilization of water resources Long-term forecasting and sustainability	Research - Hydraulic modeling, field measurements of water flows, instrumentation Teaching - Hydraulic engineering, fluid mechanics, hydrology	Department of Civil Engineering
2	Aiken	David	daiken@unl.edu	controlling ag nutrient & chemical runoff into the Missouri River & Gulf of Mexico (dead zone)	buffer strips: voluntary or mandatory; cost-share	water law; environmental law	Agribusiness Program
3	Awada	Tala	tawada@unl.edu	General topics include water sustainability with increasing demands from agriculture and population growth under projected climate change scenarios and vegetation cover change.	Water balance, surface - groundwater interactions, water use efficiency, changes in land use and land cover, technological changes, food security and water sustainability under projected climate change.	Plant water relations, gas exchange, plant ecophysiology, ecology, invasive species.	School of Natural Resources
4	Baenziger	P. Stephen	pbaenziger1@unl.edu	Drought tolerance in cereals. Historically barley is more drought tolerant than wheat or triticale, so I have an interest in drought tolerance within wheat, barley, and triticale, as well as, developing sustainable cropping systems where barley may replace wheat in dry years.	How to build flexible cropping systems that involve winter cereals. Often our cropping systems tend to consider only summer annuals. As cropping systems intensify, it may be useful to consider temporally differentiated crops.	I can contribute breeding and genetics based research and resident or distance education.	Department of Agronomy and Horticulture
5	Baigorria	Guillermo	gbaigorria@unl.edu	To estimate water requirements on agricultural and urban areas under current climate variability and projected climate change	To use the framework of CropClimate Initiative to model water requirements of agricultural and urban areas for different crops at resolution higher than county level for climate variability and projected climate change	Expert on climate downscaling and crop modeling.	School of Natural Resources
6	Bartelt-Hunt	Shannon	sbartelt2@unl.edu	water reuse, occurrence and behavior of emerging contaminants in agricultural wastewater	see answer to number 1	expertise in contaminant fate and occurrence in agricultural systems	Department of Civil Engineering

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7	Beyene	Shimelis	sbeyene2@unl.edu	Time is my top constraints for writing proposals, including application to the AFRI Water competitive grant program. I just taught three classes and to lab session this semester.	Salinity for irrigation related projects. But, as a social scientist, I am interested more in issues related water governance, from policy to access and management at local levels.	Research: ethnographic methods (interview, discussion and participant observation, PRA; quantitative household survey, nutrition and health assessment. My research focused on natural resource management, food security and institutional changes. Teaching: From participatory training at local community level (often illiterate communities) to a variety of courses to undergraduate and graduate students at UNL and other universities. Extension: My extension experience so far has been limited to providing training to extension agents and government line departments in third world setting.	Department of Anthropology
8	Blanco	Humberto	hblanco2@unl.edu	Crop residue baling and grazing; Implications for soil water quantity and quality	Crop residue baling and grazing; Implications for soil water quantity and quality	Soil management Applied Soil Physics Soil processes affecting soil productivity	Department of Agronomy and Horticulture
9	Burgin	Amy	aburgin2@unl.edu	Nitrogen and phosphorus non point source pollution.	Intersection of climate change and changes in nitrogen loading/pollution in agricultural regions.	Nitrogen cycling in aquatic ecosystems.	School of Natural Resources
10	Cannon	Karen	kcannon2@unl.edu	Harnessing the power of social media to listen, measure, understand, and engage citizens in discussion of water issues	The Pew Research Center said that as of August 2013, 72% of online adults are using social networking sites. How do people use social media and social networks to find, share and understand information about complex science-related issues such as water quality and water quantity? Do they use social media to engage in such public issues? How can researchers and experts in the field of water quality and water quantity use social media to share important information and engage key groups to solve related problems?	As an agriculture/natural resources and communications scholar, my areas of expertise and research include public opinion related to issues in agriculture and natural resources, social media and social networking tools, communication theories such as framing, agenda-setting, diffusion of innovations, social change, crisis communication and issues management. Additionally, a major area of focus in my teaching is the translation of complex scientific information into lay language, which helps members of the public make related decisions. Ultimately, I'm focused, as both a researcher and a teacher, on how to make complex science related to agricultural and natural resources issues like water "accessible" to citizens so that they can use the information to make informed choices, whether with their dollars, their votes or their support.	Agricultural Leadership, Education and Communication

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11	Chen	Xun-Hong	xchen2@unl.edu	"Sustainability of Groundwater Resources for Agriculture Development in the High Plains Region in a Changing Environment" Background--The High Plains Aquifer is the largest aquifers in the US. This aquifer is characterized by its shallow depth, unconsolidated sediments and high water-yield capacity. Thus, with the easy access to the vast groundwater storage for irrigation, the US High Plains becomes a major agriculture production region and its products are exported worldwide. The sustainability of the groundwater resource in this aquifer affects the food security in US and the world. The High Plains aquifer is often hydrologically connected to surface water in most parts of the area. As a result, use of groundwater in the past 50-60 years has affected surface water system and led to some urgent environmental and water management issues. Similarly, surface water uses, for example diversion from rivers to canal irrigation systems, have impacted the groundwater dynamics. In the changing environments (climate change and population growth), appropriate storage of the groundwater is the backbone for sustainable agriculture, at the same for maintaining healthy stream ecosystem. This big challenge for balancing the aquifer-stream-agriculture systems requires researchers, policymakers and citizens to work together for protecting long-term prosperity in this region.	1. How will the agriculture ecosystem and the aquifer respond to the climate change (prolonged droughts and high intensity of rain events)? 2. What are the hydrological connectedness level between the High Plains Aquifer and the river network? How will the continued groundwater irrigation in the High Plains area affect the local hydrologic cycle? 3. How will cropping and meat production practices adapt to frequent weather extremes and the changing world food markets (for example, if demand on ethanol decreases due to gas/oil production from shale and demand on meat increases)? 4. How to optimally use the water resources based on an adaptive decision-making system so that the groundwater storage and surface water system will be balanced in agriculture watersheds?	My research areas include 1) the hydrogeology of the High Plains Aquifer, 2) investigation of stream-aquifer connectedness in the Platte River, the Blue River, the Elkhorn River, and the Republican River basins, 3) development of integrated numerical modeling system to analyze the hydrologic cycle and streamflow depletion due to groundwater irrigation, 4) constructed groundwater flow models to simulate stream-aquifer interactions in the Platte River Basin, the Elkhorn River Basin, the Republican River Basin and the Sand Hills area. My teaching activities: I taught 1) Applied Groundwater Modeling course, 2) Geostatistics course. I run workshops (Groundwater modeling using MODFLOW; Spatial interpolation methods) for Nebraska Natural Resources Districts. My outreach experiences: I conducted research projects for eight Natural Resources Districts (NRD) in Nebraska and frequently interact with NRD staffs and some farmers. I have international collaboration experiences (mainly with China).	School of Natural Resources
12	Clarke	Jennifer	jclarke3@unl.edu	Management and access to data, predictive modeling, statistical methodology for precision agriculture involving data integration	As this is focused on harnessing big data, how can we use 'big data' to optimize the use of resources and water, predict changes in agricultural resources, and build an adaptive agroeco system?	research: multitype data modeling, prediction teaching: bioinformatics, statistical theory and methods, computational pipelines	Department of Food Science and Technology
13	Detweiler	Carrick	carrick@cse.unl.edu	Collecting more information on the water quality in hard to access locations without having to permanently install sensors or manually collect samples.		Primarily UAV technology and sensor networks for remote monitoring at a higher spatial and temporal resolution than currently possible.	Department of Computer Science and Engineering
14	Dunigan	David	ddunigan2@unl.edu	Evaluation of virus load in water sources	How does the virus load compare between surface and ground water sources? Are there relationships between viruses from surface and associated ground water sources?	Aquatic virus ecology, algal virology	Nebraska Center for Virology

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15	Durso	Lisa	lisa.durso@ars.usda.g	Impact of water quality on human health	A)Impact of agricultural runoff into surface waters on the transport of antibiotic resistant bacteria and antibiotic resistance genes through agroecosystems to impact human clinical outcomes. Role of environment as reservoir of resistance. B)Development and implementation of BMPs that concurrently target nutrient and microbial elements of water quality, including incorporation of behavioral and economic aspects that provide information to overcome	Research: microbiology, pathogens, fecal indicators, antibiotic resistant bacteria, antibiotic resistance genes, soil microbial communities, using metagenomic tools to evaluate antibiotic resistance.	Department of Agronomy and Horticulture
16	Dvorak	Bruce	bdvorak@unl.edu	Understanding the fate and transport of emerging contaminants & nitrate in order to develop improved BMPs and treatment approaches to protect public health and the environment, and esp. domestic and community water supplies.	Understanding fate, transport, and BMPs/treatment options for ag chemicals that enter domestic and community water supplies. Focus on emerging contaminants (as well as long est. contaminants such as nitrate).	synthesis for developing rules of thumb based on economics and key physical/chemical parameters for best applications) - water quality monitoring	Department of Civil Engineering
17	Elmore	Roger	relmore@iastate.edu	crop water use efficiency	How to maintain or improve crop grain yields while improving water use efficiency	Applied crop production research and Extension	Horticulture/Agronomy
18	Erickson	Galen	gerickson4@unl.edu	Water for Beef: Water footprint for holistic beef production systems in the Great Plains	We need to characterize usage for beef cattle production systems that consist of forage based production and grain finishing. This objective requires complete water usage, and factors controlling usage across the whole beef production complex including water use by pasture, by cattle, by crops fed to cattle, and beef processing.	Research and Extension expertise on beef feedlot production. Previous experience with complete life-cycle analyses for beef production related to energy. Similar modeling approaches are needed for water footprint.	Department of Animal Science
19	Ferguson	Richard	rferguson@unl.edu	Improvement of Fertilizer Nitrogen Use Efficiency Through Refined In-Season Management Approaches	Fertilizer N use efficiency has steadily increased over the past 20 years. Further increases in efficiency will require refined methods using sensors and/or controlled release fertilizers. Research is needed on how to best adopt emerging technologies to Nebraska's irrigated production systems.	Research in spatial nutrient management, canopy sensing of crop stress, nitrogen loss mechanisms. Teach 2 classes: Site-Specific Crop Management (senior level); Spatial Variability in Soils (graduate level). Extension experience in nutrient management, water quality. Experience working with several NRDs, Nebraska Ag Technologies Association.	Horticulture/Agronomy

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20	Fernando	Samodha	sfernando2@unl.edu	The influence of animal waste that enters the water system and it's effect on water quality and pathogen and microbial load.	What effect does agricultural waste (cattle, and pig feces and urine) have on ground water quality and microbial and pathogen load?	microbial ecologist studying gut microbial communities in cattle, pigs and chickens. High-throughput sequencing and bioinformatic analysis of microbial communities.	Department of Animal Science
21	Flores	Rolando	rflores2@unl.edu	Water in food processing	Water in food safety and cleaning operations. When is enough water and when is too much in sanitation of food processing plants.	Food processing engineering	Department of Food Science and Technology
22	Forbes	Cory	cforbes3@unl.edu	Promoting scientific and agricultural literacy among students and the public around water issues	How do learners leverage a) systems thinking and b) scientific models to reason about water? How do individuals in a variety of public and private settings utilize their scientific knowledge to engage in decision-making about agricultural water quantity and/or quality?	Background in natural resources and 'systems' science across life and Earth, NSF-funded project on elementary students' model-based reasoning about water, currently work investigating teachers' science instruction about water, water-related professional development with teachers	School of Natural Resources
23	Francis	Charles	cfrancis2@unl.edu	Efficient use of rainfall in highly diversified rotations and spatially-diverse cropping systems on small and medium-sized family farms	Species-diverse cropping systems that incorporate multiple economic species in the same field can improve water use efficiency and system resilience; these need to be compared to conventional monocrops.	Multi-species cropping and farming systems, integrated crop/animal systems, agroecology and organic agriculture teaching, urban and peri-urban food production and local food systems.	Department of Agronomy and Horticulture
24	Franti	Thomas	tfranti@unl.edu	Pesticide-free crop production is the number one challenge in water (environmental) quality.	How can we develop a pesticide-free, no-till production system for commodity crops?	agricultural surface water quality management	Department of Biological Systems Engineering

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25	Franz	Trenton	tfranz2@unl.edu	Irrigation agriculture accounts for 40% of global food production, yet it is estimated that of the 2,500 trillion liters of water used globally for agriculture each year, 60% is wasted through inadequate water conservation. The key variables for efficient irrigation water management are plant water demand and root zone water storage. Basic energy balance approaches can provide estimates of plant water demand, but quantifying root zone water storage is difficult given the multitude of controlling factors that vary across scales. For irrigation agriculture, the two critical spatial scales are the sprinkler scale (~900 m2) and center-pivot scale (~50 ha). Two key challenges prevent accurate and efficient soil moisture sampling and water management. First, time and labor costs make it impractical to directly sample soil moisture across spatial and temporal scales. Second, widely accepted estimates of soil moisture via indirect methods are largely restricted to the point scale and large-scale, which are difficult to reconcile with the sprinkler and center-pivot scale. Because of these challenges a large gap exists between accepted industry practices of soil moisture monitoring and available soil moisture monitoring techniques leading to significant water management inefficiency.	The 2013 Global Agricultural Productivity report identified technologic development as one of the five key future areas for meeting rising food demands. My long-term goal is to develop and implement new soil moisture monitoring technologies towards conserving water in different agricultural settings. The goal of this project would be to improve our understanding of how soil moisture is organized at the critical sprinkler and center-pivot scale. I will use electromagnetic and nuclear methods to test two hypotheses relating to water inefficiency: 1) soil moisture estimates at the center-pivot spatial scale are poorly represented by a few point measurements, and 2) soil moisture estimates at the sprinkler scale are not fully represented by a few point measurements and/or static spatial maps of apparent bulk electrical conductivity, soil pH, and elevation.	Experience with a variety of electromagnetic and nuclear methods to measure soil water at various spatial and temporal scales. In the process of developing an applied hydrogeophysics course at UNL. I have a 0.35 extension FTE but haven't built a program yet since I arrived here recently.	School of Natural Resources
26	Gilley	John	John.Gilley@ars.usda.	Nitrogen and Phosphorus Management Following Land Application of Manure	What can be done to reduce the impacts of emerging contaminants and pathogens from agricultural areas?	My academic training is in engineering hydrology and water quality and I have been researching nutrient management and land application issues for 14 years.	Department of Biological Systems Engineering
27	Gilley	John	john.gilley@ars.usda.g	Improving nutrient management in agricultural landscapes with focus on nitrogen and phosphorus.	Optimizing Watershed Manure Management for Water Quality Protection and Conservation under Climate Change	I am identifying cropping and management practices for utilizing manure as a valuable nutrient source and soil amendment without causing adverse environmental impacts. Laboratory and field studies are being conducted to identify land application procedures that reduce nutrient transport by runoff.	Department of Biological Systems Engineering

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28	Glewen	Keith	kglewen1@unl.edu	Nitrogen management	1. Nitrogen fertilizer management most often is based on economics without regard to the impact on the environment. 2. For to many growers the decision to apply irrigation water is not based on proven research.	1. Develop and coordinate the annual Crop Management & Diagnostic Clinics which touch industry agronomist representing millions of row crop acres in Nebraska. 2. Annually coordinate the development and implementation of the Soybean Management Field Days and the replicated on-farm research associated with it. 3. Teach nitrogen and irrigation water management training programs to corn and soybean growers.	Southeast Research and Extension Center
29	Guretzky	John	jguretzky2@unl.edu	Impact of Beef Cattle Production Systems on Water Quality	1. Minimizing nutrient losses to water sources from feed yards 2. Recycling of feed yard wastes for efficient crop utilization 3. Management of cattle on pasture to minimize losses of nutrients to water through leaching and surface water runoff 4. Ammonia volatilization, deposition, and indirect N2O emissions 5. Grazing livestock and riparian area management	Research contribution: Nitrogen leaching from pasture and rangeland; grazing and riparian area management; crop nutrient uptake and use efficiency; N2O emissions; crop manure use efficiency Teaching contributions: I teach the introductory AGRO/RNGE 240 Forage Crop and Range Management course, a 4 credit hour lecture/laboratory course. It would be interesting to expand discussion of beef cattle production systems on water quality, with a particular emphasis on range/pasture grazing influences. I also have experience with development on online learning modules.	Department of Agronomy and Horticulture
30	Harveson	Robert	rharveson2@unl.edu	Identifying the right amount of water to receive a yield response without using more than the crop needs.	Trying to estimate water levels sufficient to maximize crop productivity without enhancing conditions for disease development.	Plant pathology root diseases and their incidence and severity in response to different levels if irrigation (related to both listed above).	Panhandle Research and Extension Center
31	Hayes	Michael	mhayes2@unl.edu	Long-term community resiliency related to water quantity in a changing future, facing challenges such as climate extremes,drought, climate change, and additional stresses.	How do the water systems across the Plains (community and agricultural) better plan and prepare for future conditions given multiple challenges (provided by UNL expertise)?	The NDMC can contribute in each area. Our research interests include both physical sciences (drought/climate indices and indicators) and social sciences (perceptions, stakeholder involvement, planning methodologies, decision support strategies). In teaching, we have been involved with both K-graduate educational activities related to water, climate, and drought issues and topics. We also do a lot of "outreach" to the public on water, climate, and drought issues. This transitions to extension as much of our outreach is focused on getting information to a wide variety of stakeholders through a multiple approaches (web-based, workshops, listening sessions, surveys, participatory activities, etc...)	School of Natural Resources

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32	Heeren	Derek	derek.heeren@unl.ed	Large scale management of water resources, and then optimizing ag production within the constraints on producers' water use (e.g. water allocations)	under water limited conditions, how does irrigation water use efficiency vary spatially within a field	research in management of variable rate irrigation systems to maximize water productivity	Department of Biological Systems Engineering
33	Hein	Gary	ghein1@unl.edu	Optimal water management fitting into a comprehensive and integrated crop management program that leads to a more sustainable production system	A component of many AFRI programs is to incorporate extension and education components into the grant. Activities proposed for these components may be handled through teaching/extension assistantships or internships that would be excellent experiential opportunities for Doctor of Plant Health students. Incorporating educational opportunities and also involving Doctor of Plant Health students into the educational, extension , and to a lesser degree the research programs of a grant would bring a unique angle that could make those components of the grant stand out.	Students in the Doctor of Plant Health program offer the potential for increased flexibility of funding as they could be involved in various projects undertaken during the period of the grant.	Doctor of Plant Health Program
34	Higley	Leon	lhigley1@unl.edu	actually, I don't have any ideas here. I suppose influence of climate change on water availability and use is the most important issue that comes to ming.	Again, I don't have any experience beyond research on plant responses to biotic stressors and water stress. Oh, and influence of water on insects including endangered species.	plant physiology (stress physiology, especially photosynthesis), insect ecology. Teaching in ecology and related areas.	School of Natural Resources
35	Hoagland	Kyle	khoagland1@unl.edu	Increased BMAA (a neurodegenerative cyanotoxin)in surface waters receiving agricultural runoff, both as a consequence of global warming.	(a)To what extent will global warming lead to greater levels of eutropication of surface waters in agriculturally dominated ecosytems? (b) As cyanobacterial dominance in these eutrophic systems increases, to what extent will cyanotoxins also increase in frequency and concentration? and; (c) What is the human health risk of any cyanotoxin increases that occurs, throughout the Midwestern U.S.?	a) We have recently published a methods paper on BMAA analysis in environmental samples and now have a paper in review that documents for the first time he presence of BMAA in several Nebraska reservoirs which are prone to cyanobacterial blooms. ;; (b)I have over 35 years of experience conducting water quality-related research primarily in Nebraska with more than 60 peer reviewed publications, and; (c) In the past, I have taught limnology, advanced limnology, wetlands, and aquatic botany, and have directed more than 30 MS and 10 Ph.D. students and 4 postdocs in this area.	School of Natural Resources

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36	Hu	Qi	qhu2@unl.edu	How has the irrigation changed the water cycle in the Great Plains and affected its ecosystems?	Irrigation using groundwater moves the groundwater to the surface and changes the soil moisture, surface temperature and ET. These changes should be shown in local and regional climate (precipitation and temperature) but little evidence is shown changes in precipitation in the Great Plains related to irrigation. Meanwhile, Increasing surface water should add more recharge to the surface streams and change their them in their temperature and flow volume. These changes would further influence the aquatic habitats and stream morphology. Increased soil moisture could also affect surface vegetation and terrestrial ecosystem. These changes in natural systems would feedback to the agriculture. We know little about how any of changes may have taken place and let alone their interactions. There are a lot needed to be studied here.	Global and regional climate modeling and hydrological modeling and diagnostics.	School of Natural Resources
37	Kolok	Alan	akolok@unomaha.edu	How can agricultural communities become involved in environmental stewardship and the monitoring of their own surface water quality in both developed and developing countries.	How can food production move toward sustainability in both small scale and large scale systems, while also maintaining production in the fact of global climatic change?	Water quality monitoring, community engagement in water quality monitoring, international expertise in Latin America.	Water for Food Institute
38	Miller	Daniel	dan.miller@ars.usda.g	Fate of residue antibiotics in manure	Fate of antibiotics in manure storage Fate of antibiotics in soil and water	Microbiology, animal manure analysis	Department of Agronomy and Horticulture

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39	Munoz-Arriol	Francisco	fmunoz@unl.edu	1) Identify and implement sustainable development strategies to achieve Water and Agriculture Sustainability 2) Integrate process understanding and modeling capabilities to estimate current and future water states (availability of water to sustain agricultural and ecosystems services). 3) Identify the association between physical, biological/biogeochemical, and socioeconomic components of the water system 4) Identify the interplay between the water and climate systems to secure food production 5) communicate scientific and technological progresses on water and agriculture sustainability to stakeholders 6) Promote and encourage interdisciplinary views in undergraduate programs	1) Develop a multidisciplinary framework that integrates water, climate, agro-ecosystem, and ecosystem information to identify how historical records have shaped current environmental states (i.e. water availability, land use, crop production, changing climate, etc.) 2) Integrate climate, hydrologic (surface water and groundwater), crop, ecosystem, population growth, and economic models, to (a) investigate the interplay of the above components shaping current and future environmental states; (b) develop possible paths (based on water and agriculture resources management strategies) of sustainable development 3) The Water System embraces water quality and quantity. Better understanding the relationship between physical, biological/biogeochemical, and socioeconomic components can contribute to answer questions such as (a) How water availability is regulated by biological activities (or biogeochemical alterations of the elements)?; How water availability affects the social tissue or economic development?; How water- and agro-related policies and management activities influence water availability?	1) My overall research is focused on Water Sustainability. Two key components of my research on Water Sustainability are diagnosis and prognosis of water states. On one hand, the diagnostic components apply hydroinformatics techniques to better understand current and historical water states. These techniques include database development and administration (interoperability) as well as process understanding and uncertainty estimation from massive water-related data (BIG data and data discovery applied on water resources and climate). On the other hand, I work with different models [atmospheric and hydrologic (surface and groundwater)] to evaluate current and future water states, and ultimately integrate them in order to provide systemic diagnostics and prognostic estimates of water resources across scales.	Department of Biological Systems Engineering
40	Pavlista	Alexander	apavlista@unl.edu	Growing crops with limited irrigation	The effect of less water on crops and the quality of their yield. Looking for more water-efficient cultivars and crops.	crop physiology, plant growth regulation (stress), potato production	Panhandle Research and Extension Center

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41	Pekarek	Katie	kpekarek2@unl.edu	Produce enough food, fiber and fuel for more than 9.5 billion people by 2050 while enhancing soil, water, and air quality, biodiversity, and ecosystem health.	Variable Cover Crop Applications Create a baseline data set of public knowledge about nonpoint source pollution. Develop evaluation techniques to determine knowledge change following water quality education activities. Identify enabling factors and methods of delivery resulting in behavior modification which impact water resources. Analyze and evaluate existing water quality education and outreach practice strategies for effectiveness.	Communication and Outreach through Extension Use of current and emerging technologies for education Non-formal and formal educational methods Curriculum development Urban & Agricultural Runoff Lake Water Quality Floodplain and Watershed Management	Southeast Research and Extension Center
42	Ray	Chittaranjan	cray@nebraska.edu	1) How can we achieve maximum yield of field crops without significantly affecting the water levels in aquifers and impacting water quality? Can we maintain this level of production for one to two centuries?	1) Natural environment undergoes changes based on temperature, availability of oxygen, and presence of toxins. The resulting redox processes affect the transport of contaminants and pathogens and transformation pathways for redox-sensitive chemicals. 2) Large-scale simulation efforts utilizing power grid, crop simulation, and ground water models will be needed to estimate the sustainability of agriculture to achieve maximum yield	Coupling lab and field experiments with modeling to answer questions of environmental concern.	Water Center
43	Read	Paul	pread@unl.edu	Deficit irrigation in grape crops	Quantification of grapevine water needs in the upper Midwest/Nebraska.	Vineyard Management/Viticulture, Physiology of Horticultural Crops; Plant Tissue Culture	Department of Agronomy and Horticulture

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44	Schmidt	Amy	aschmidt@unl.edu	My primary issue of interest under this program is reducing losses of nitrogen from fall application of manure and commercial fertilizer. I would like to investigate multi-cropping (cover crop) systems to identify the most appropriate cropping system for reducing nutrient losses, producing livestock feed (cover crop grazing? harvest of cover crop?), and reducing water use. Ultimately, I'm interested in maximizing nutrient utilization, land productivity, and sustainability of the crop-livestock system. Looking at the impacts of a multi-cropping system on soil health benefits from manure application would also be a principle interest of mine.	From meeting with AFRI program leaders last fall, it seems that AFRI is interested in proposals that address the synthesis of existing/proven management practices that have been shown to reduce nutrient and emerging contaminant losses to water rather than wanting to fund projects looking at new practices that address a single contaminant or a single practice. I think to be competitive with an application, we will need to carefully consider how we could demonstrate impact of implementing multiple practices at the field level and include a strong extension component for disseminating information to producers. One aspect of any proposal we submit should be a strong social aspect in terms of understanding not only WHAT to recommend to producers, but HOW to entice them to implement our recommendations.	Extension: I am interested in leading an effort to deliver producer education programming regarding best management practices for reducing environmental impacts from manure production/utilization in integrated livestock/crop production systems. Research: My area of expertise is manure and nutrient management. In a project involving a systems approach to sustainable crop and livestock systems, I would like to contribute to the design and implementation of a project as described in question 1.	Department of Biological Systems Engineering
45	Schmidt	Amy	aschmidt@unl.edu	Fate and transport of emerging contaminants from livestock production systems and/or land receiving manure application	I would like to look at plant uptake of emerging contaminants as 1) a means of remediating these contaminants in the environment and 2) the role of forages as vectors for transmitting pathogens among grazing cattle.	bioluminescent imaging of biological contaminants, producer education related to manure management	Department of Biological Systems Engineering
46	Shapiro	Charles	cshapiro@unl.edu	Managing to reduce high nitrate groundwater	How to clean up contaminated aquifers while producing crops or forages and preventing further contamination?	Applied field research, nitrogen management.	Department of Agronomy and Horticulture
47	Shea	Patrick	pshea1@unl.edu	1. How do we effectively target, manage and regulate agricultural practices (crops and animals) and agrichemical applications to minimize off-site movement and adverse impacts of parent compounds (pesticides, fertilizers and pharmaceuticals), their decomposition products and secondary reaction products to human health and the environment? 2. Can we make novel or better use of agricultural (and industrial) byproducts to prevent and remediate contaminated water and soil and promote more sustainable systems and carbon sequestration?	1. Can we cost-effectively remove inorganic and organic contaminants and pathogenic microorganisms from agricultural (as well as municipal and industrial) runoff and waste streams? 2. What agricultural (and industrial) byproducts can be used to help achieve the above without further endangering human health and the environment?	1. Environmental chemistry and toxicology of agrichemicals. 2. Agrichemical fate and transport. 3. Assessment of soil and landscape vulnerability to off-site transport. 4. Prevention of contamination of water and soil. 5. Remediation of contaminated water and soil. 6. Non-target impacts of agrichemicals and their decomposition and secondary reaction products on the environment and human health.	School of Natural Resources
48	Snow	Daniel	dsnow1@unl.edu	Reducing impacts of chemicals of emerging concern and the presence and movement of waterborne pathogens in the landscape	What specific practical integrated livestock and crop production practices can maintain or improve long term water resource quantity and quality?	Water chemistry and quality, analytical methods,chemicals of emerging concern, stable isotope analysis	School of Natural Resources

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49	Specht	Annie	aspecht2@unl.edu	Perceptual issues related to media coverage or portrayals of agricultural water quantity and quality	How have news and entertainment media framed, covered, and/or portrayed water issues related to agricultural production? How have these depictions influenced how the wider public perceives water issues? What sources do news media utilize related to water quality/quantity? What visual cues do they incorporate?	I research popular portrayals of agricultural production and their potential influence on public perceptions of the food and fiber industry but have not yet focused on the environmental angle. I am teaching a media literacy and agriculture in popular media course next semester.	Agricultural Leadership, Education and Communication
50	Stone	Gary	gstone2@unl.edu	Producer awareness and practice of irrigation water management in cropping systems	Irrigation water management tools Irrigation water management producer education Implementation of producer irrigation water management practices	teaching irrigation water management tools (ET gages & soil water sensors) and practices	Panhandle Research and Extension Center
51	Stowell	Richard	rstowell2@unl.edu	Conveying research-based information to livestock producers regarding the role of water in their operations, implications of climate effects on water availability, and ways to adapt to expected changes in precipitation or water availability.	What are the water footprints of beef systems? What systematic changes in livestock production would best suit long-term water supply trends in the [northern Ogalala] region?	Am on leadership team of Livestock & Poultry Environmental Learning Center [eXtension] Leading a national NIFA-funded Extension project on Animal Agriculture and Climate Change. Interested in helping to integrate research and extension efforts.	Department of Biological Systems Engineering
52	Szilagyi	Jozsef	jszilagyi1@unl.edu	Statewide recharge mapping to the groundwater is an important issue because this is the key component in groundwater quality and quantity.	Recharge mapping requires similar maps of evapotranspiration (ET). I have done such maps (recharge and ET) for the whole state but they need updates to include the past several years.	I could contribute my earlier research and expertise in the subject to play a role in the updating of these maps.	School of Natural Resources
53	Thomas	Steven	sthomas5@unl.edu	Nitrate runoff to Mississippi River Tributaries	How does climate variability interface with decisions about crop production and fertilizer use interact to influence N yields across the corn belt	stream biogeochemistry, ecosystem ecology	School of Natural Resources
54	Tyre	Drew	atyre2@unl.edu	Food is about more than row crops. In many parts of the world, bush meat and wild fish provide high quality protein sources. How do we improve agricultural yields while preserving the terrestrial and aquatic habitats on which these resources depend?	What is the response of Threatened and Endangered species in the Platte River Basin to shifts in surface and ground water irrigation?	Stochastic Population dynamics modelling for fish and wildlife populations Structured decision making for evaluating management tradeoffs.	School of Natural Resources
55	Walia	Harkamal	hwalia2@unl.edu	Drought tolerance in cereals.	Root traits for water use efficiency Grain development under water stress	Physiology Functional Genomics Teaching - focus on climate change and food productivity	Department of Agronomy and Horticulture

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56	Weber	Karrie	kweber@unl.edu	Protecting water quality and protecting public health while maintaining food production for a growing population.	Resulting nitrate contamination in groundwater that leads to a secondary contamination specifically Uranium. This negatively influences drinking water quality (especially to rural populations) as well as the quality of irrigation water within major US aquifers, ie., High Plains and Central Valley Aquifers. Recent research also indicates that food crop (specifically produce) will take up U up to 35 times background levels. Yet, we don't understand the sources of Uranium or the various mechanisms that would mobilize natural Uranium in order to begin to consider best managment practices to minimize problems or predict areas where this could be a problem.	water quality Nitrate, metal (iron, arsenic) and radionuclide (uranium) biogeochemistry geochemistry microbial ecology geomicrobiology	School of Biological Sciences
57	Whitney	Todd	twhitney3@unl.edu	Irrigation rate recommendations for Hybrid Corn Production with Salt Brine Defoliation.	How does ET irrigation water usage, based on corn growth stages, differ for hybrid corn production than standard corn irrigation ET. When should be the final irrigation scheduled for hybrid corn defoliated with salt brine prior to harvest.	As an UNL Extension educator, I would like to coordinate on-farm research with hybrid seed corn producers linked with UNL irrigation specialists and UNL corn physiologists. Then, assemble this research into an UNL Extension NebGuide for Hybrid Corn Irrigation Scheduling.	eXtension
58	Woldt	Wayne	wwoldt1@unl.edu	Sensor and sensor platforms that harvest big data across large expanses of land, and harnessing the power of big data through emerging modeling concepts, toward understanding highly complex agro-ecosystems from multi-scale space-time continuum, that are managed and impacted by the human dimension.	1) New and emerging sensor platforms - unmanned aircraft systems. 2) New and emerging sensors - low cost thermal, pepper sensors, e-nose sensors, hyperspectral, lidar, and gas flux. 3) New and emerging methods to integrate disparate sensor data that has been obtained across multiple platforms (ie, satellite, unmanned aircraft, and terrestrial). 4) New and emerging modeling techniques involving soft computing approaches, data mining, fuzzy logic, self organizing maps, neural networks, etc. 5) Building models that are able to provide insights into quantification and prediction of agro-ecosystem resilience across multiple space-time scales. Modeling for knowledge.	1) Expertise in unmanned aircraft systems as a sensor platform to support the pursuit of big data across large expanses of land. 2) Expertise in soft computing techniques for integration of data derived from multiple platforms, and simulation of complex systems driven by big data. 3) Initial expertise in resilient and adaptive systems.	Department of Biological Systems Engineering

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59	Young	Steve	steve.young@unl.edu	Water use by weeds in cropping systems	Consumptive use of water by weeds that are competing with crops - how much is it? how important is it? what difference does it make for different weeds and crops? how does it compare to traditional cover crops? and can it be compensated for with irrigation? Also, are we seeing a shift in weed populations that are now more drought tolerant and if so, is this related to genetics or a phenotypic response based on plant plasticity?	Currently conducting research on response by weeds to stress, which includes drought; extension programming covers a range of clientele, including farmers, teachers, students, and agencies	West Central Research and Extension Center
60	Young	Steve	steve.young@unl.edu	Consumptive use by competing vegetation that reduces yields, quality, and harvestability of crops.	1) How much water is being used by weedy species to the detriment of agricultural crops? 2) Are extreme events (e.g., drought) selecting for drought tolerant weeds?	Weed ecologist with a 50% research and 50% extension appointment. I teach high school students and teachers and provide programs for land managers and owners focused on the topic of weedy and invasive plants and their impacts on ecosystems.	West Central Research and Extension Center