College of Agricultural Sciences

Stakeholder Survey for Improved Strategic Priorities

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2009

College of Agricultural Sciences

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About the Study

The College of Agricultural Sciences identified five program priorities that are reflected in the 2008-2013 Strategic Plan as energy; entrepreneurship; food, diet and health; pest prediction and response; and water quality and quantity. In spring 2009, a survey was sent to college stakeholders with expertise in the program priority areas to provide guidance on the implementation of the strategic plan, specifically input regarding how the college can build on innovation in these areas to best meet the needs of the agricultural industry. The survey was sent to individuals who have been or are involved with the Penn State Ag Council, the Ag Action Network, Capital Days, or College of Agricultural Sciences focus group sessions.

An email message with a link to the online survey made available through wwww.surveymonkey.com was sent to 215 individuals Eighty-eight individuals responded to the survey of which 58 completed the survey for a partial response rate of 41% and a complete response rate of 27%.

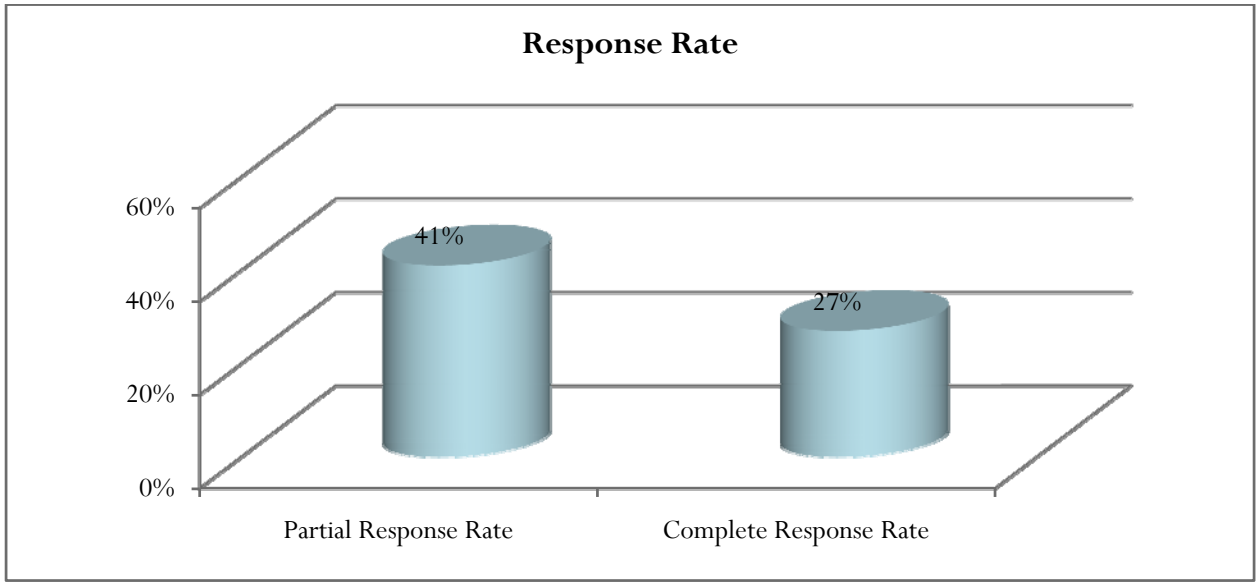

Figure 1. Partial and complete response rates for the stakeholder survey.

About the Respondents

Respondents were asked to indicate the area of expertise that their business or organization primarily represents. One-third of the respondents (33%) identified the area of expertise that their business or organization primarily ahdrepresents as the animal sciences industry.

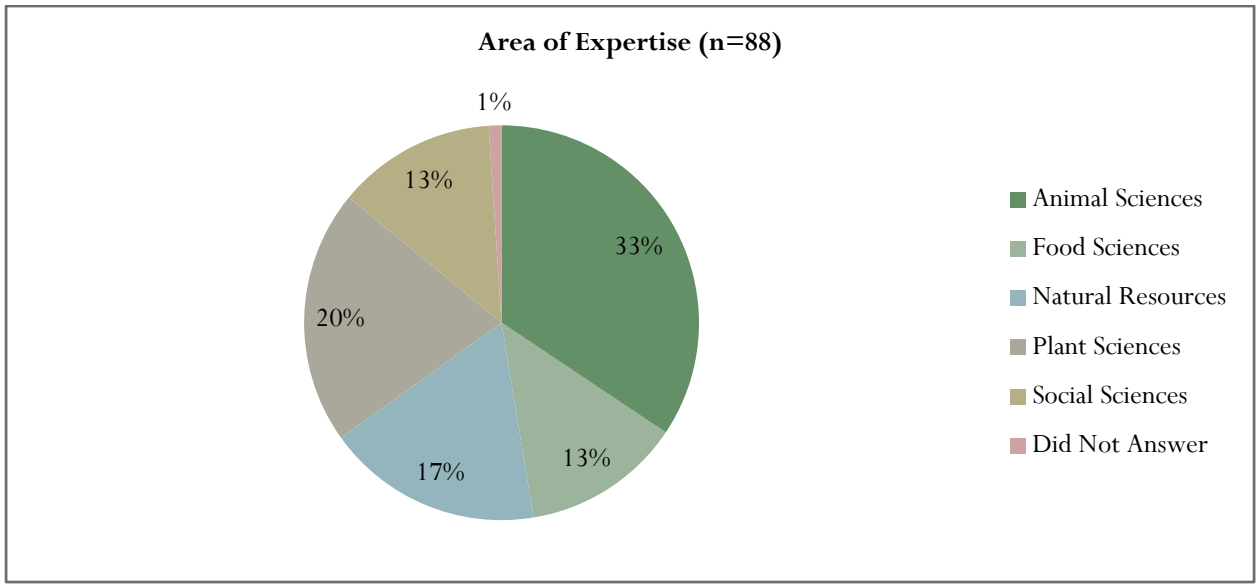

Figure 2. Area of expertise of stakeholder survey respondents.

Respondents also were asked to indicate which group they are a member and in which activities they have participated. Fifty-seven individuals responded to the question. A majority of individuals (45%) have participated in events for Capital Days.

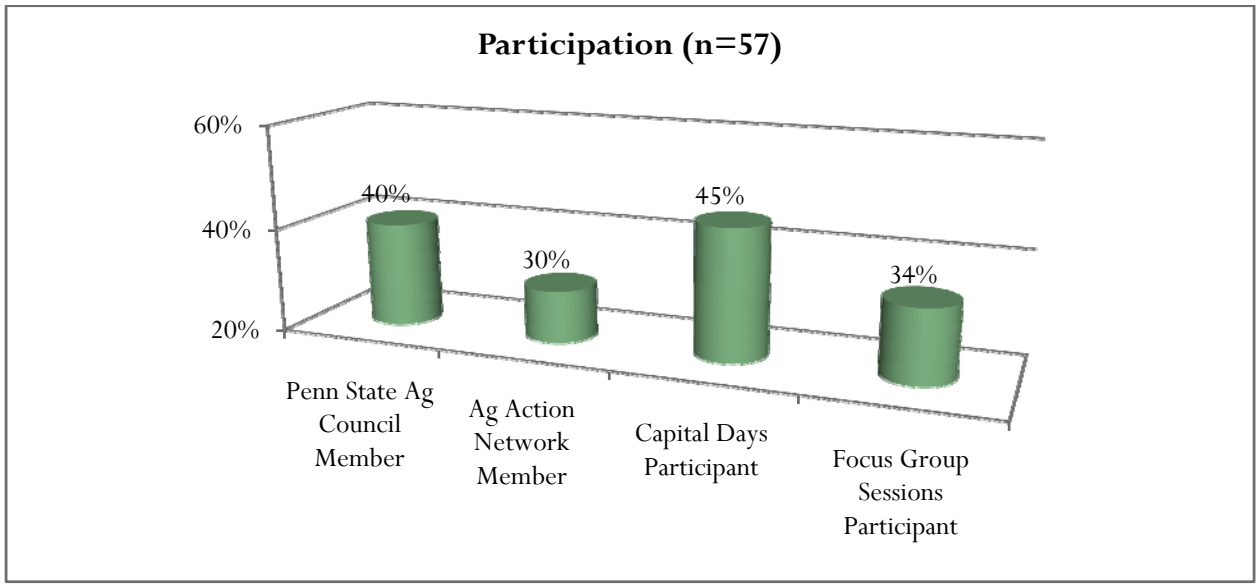

Figure 3. Membership and activities in which stakeholder survey respondents have participated.

About the Penn State Ag Council

Thirty-five individuals who responded to the survey indicated that they are members of the Penn State Ag Council. These respondents were asked to identify the extent to which they agree with statements about the opportunities that the Ag Council provides. Twenty-two respondents answered the question. Respondents (64%) most strongly agreed that the Penn State Ag Council provides opportunities to learn more about College of Agricultural Sciences programs, activities, and opportunities.

Table 1.

Level of Agreement about the Opportunities that the Ag Council Provides

Penn State Ag Council provides opportunities to:	% Strongly Disagree	% Disagree	% Agree	% Strongly Agree
Learn more about College of Agricultural Sciences programs, activities, and opportunities.	0%	0%	36%	64%
Network with college leadership, faculty, and other industry leaders.	0%	5%	55%	41%
Provide quality feedback on college programs and research.	5%	14%	41%	41%
Relay suggestions for innovative ways in which the college can carry out its mission	0%	14%	64%	23%
Convey industry needs and concerns.	0%	11%	68%	21%
Advocate and build external support for college programs, research and funding.	0%	0%	60%	41%
Interact with college students through internships, co-ops, College Career Days, recruitment services, mentoring programs, etc.	5%	25%	45%	25%

Priority Area Action Items

Respondents were asked to review descriptions of activity for the production and dissemination of knowledge and resident education programs for the five priority areas addressed in the 2008-2013 Strategic Plan. Respondents then were asked to identify action items under each strategic priority area that are of most importance to their industry sector in Pennsylvania. The descriptions of activity and the action items identified by respondents are presented on the following page for the five priority areas of:

- energy;
- entrepreneurship;
- food, diet and health;
- pest prediction and response; and
- water quality and quantity.

Action items identified by respondents have been assembled into categories. Categories are presented in order from most to least frequently cited.

Priority Area Energy

Forty-nine stakeholders identified action items for the priority area energy. These action items cluster around nine themes, which are presented in order from most to least frequently cited: energy conservation, feedstock development, economic analysis, social and political issues, education, processing technologies, other alternative fuel research, energy and mining, and partnership. Specific action items for each theme are presented below.

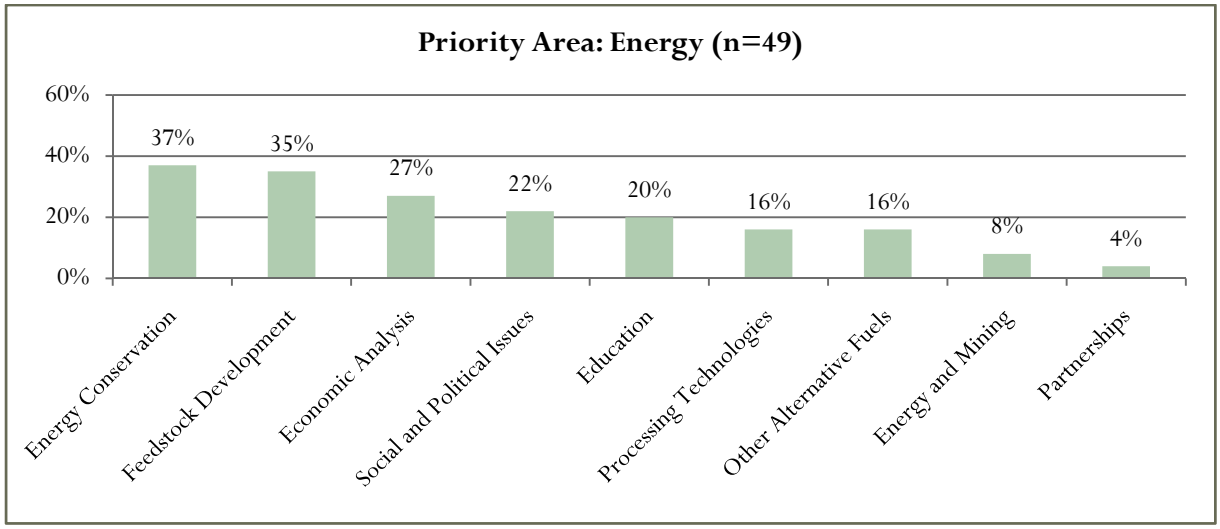

Figure 4. Energy themes on which stakeholders would like the College of Agricultural Sciences to focus. Of the 49 stakeholders who identified action items for the priority area energy, 37 percent identified action items within the theme of energy conservation.

Energy Conservation: Evaluate and develop best practices to enhance energy efficiency and environmental conservation.

1. Effect of biomass cropping and removal of biomass on soil quality, water quality.
2. Implementing sustainable biomass cropping production systems (effect of biomass production on soil OM, P and K).
3. Educating public in area that their actions have on the environment.
4. User-friendly energy footprint calculators developed for farm and home use.
5. Development of the data on the value of trees used for reducing energy consumption in homes and buildings.
6. Planning for reclaiming land affected by long-wall mining to eliminate the environmental smudge and bring positive outcome to the procedure.
7. Develop an accurate assessment on the contribution by various farm animals to greenhouse gases.
8. Greenhouse gas footprint studies.
9. Any viable abatement strategies for animals methane production.
10. Being green easily.
11. Conservation of energy and efficient use of the same.
12. Through the extension information chain, engage community residents in reducing our personal waste of resources.
13. Create materials that can be distributed online to help people with their day-to-day decision making on resources.
14. Development of BMP's for tree and shrub placement around homes and buildings to conserve energy.
15. Improve efficiency of energy usage.
16. Reusable supplies for medical sector.

17. Develop classroom materials that help youth understand recycling goals/rational.
18. Actively seek ways within our college and in collaboration with the Office of Physical Plant and University Environmental Stewardship Initiative to conserve energy and improve efficiency of energy use.

Feedstock Development: Identify bioenergy feedstocks and develop sustainable production systems.

1. Cellulosic biofuel production using mushroom stumps (waste).
2. Electricity generation or biofuel production using spent mushrooms substrate.
3. Uses of spent mushroom compost in biomass energy applications.
4. Identifying renewable biomass crops and the systems for conversion.
5. Sustainable biomass cropping production systems.
6. Sustainable biomass cropping production system.
7. Extension programs to transfer the technology to the private sector.
8. Look at food production/consumption cycle to find synergies and cooperative strategies.
9. Further develop bio-based energy production using resources not currently used for food or feed.
10. Be sure pursuit of agricultural based energy options does not sacrifice emphasis on food production.
11. Energy burned by food substances to manufacture fuel purposes.
12. Reduce impact of competition of fuel and food.
13. Develop renewable biomass that does not compete for prime food growing land.
14. Integrate energy production/efficiency with diversified farming systems including integrated livestock and crop production.
15. Work with landfills to develop gas or compost materials from the landfill materials.
16. Develop more information and technologies on the use of waste products for energy production.
17. Continued support of highlighting the production agricultural facilities that are on campus.

Economic Analysis: Research and disseminate information regarding cost-benefit comparisons and/or feasibility studies about the economic impacts of various aspects of bioenergy.

1. Energy initiative, building a sustainable bio-based economy.
2. Uses of biomass alternatives as a source of energy in mushroom production.
3. Bio energy systems as a whole.
4. Marketing biomass products (ex. switchgrass pellets).
5. Develop a farm-based package approach.
6. Coordinated strategy to transfer technology to the public and private sectors.
7. Being profitable and saving.
8. Study economics of biofuel production and viability of fuel crop that benefits PA
9. Disseminate information to governmental officials and local communities on the "true" economic benefit and costs of these alternative types of energy sources.
10. The true economic impact to industry regarding fuel from feed stocks such as corn and soybean.
11. Study and report on the balance between feed versus fuel versus food and how it impacts animal agriculture's future growth in Pennsylvania.
12. Agricultural production for food versus energy studies and programming.
13. Helping higher eds conduct energy audits on their own facilities.

Social and Political Issues: Define social and political policy issues and options related to bioenergy production.

1. Compatible goals to use grains and other bio materials for energy and animal production.
2. A broad program aimed at 90% of people who know little about where the foods and fibers they use everyday come from. This could be in conjunction with various ag organizations and the radio stations.
3. Outreach to the public through radio, television and print
4. Environmental interactions with land and food.
5. Educational opportunities through cooperative extension to connect with urban/suburban guests.
6. Feeding the masses thru production agriculture while sustaining a productive environment.
7. Ways to have regulations changed to reduce energy use in food processing and cleanup.
8. Increased PA production of foods (plant and animal) to reduce energy use in providing food to the citizens of PA.
9. Social impact assessment of alternative energy techniques.
10. Continued support of the Rockview land swap.
11. Inform people objectively about the pros and cons of the currently proposed federal legislation of Cap and Trade.

Education: Develop and implement curriculum and teaching opportunities related to bioenergy production

1. New course development will directly lead to youth education through 4-H and FFA.
2. Use more direct involvement with non-ag organizations to "train" people below 30 years of age on ag practices which recycle and create energy and reduce negative environmental impacts.
3. Youth education.
4. Develop classroom material that helps youth understand recycling goals/rationale.
5. Educate K-12 students on sustainability, alternative energy, etc.
6. Engage undergraduate and graduate student thinking on curriculum and program development.
7. Develop a major in biobased economics.
8. Need to concentrate courses of study with actually industry needs and ease of utilization.
9. Course revision, new course development, and possibly even a new minor are being considered to fill the present void.
10. Hire appropriate faculty.

Processing Technologies: Improve, develop, and assist with implementation of cost effective bioenergy processing technologies

1. Contrast biodiesel energy production efficiency to ethanol production energy efficiency.
2. Microbial genomics related to cellulose-based biofuels
3. Renewable biomass energy/synthetic biology.
4. Info on biorefineries development.
5. Identifying biopolymers.
6. Renewable biomass energy/synthetic biology.
7. Microbial genomics related to cellulose-based biofuels
8. Develop technology that is cost effective and can be used on the farm.

Other Alternative Fuel: Research additional alternative fuel options

1. Solar applications in mushroom growing.
2. Energy source possible new nuclear energy.
3. Develop the plastic burner and commercialize for greenhouse heating.

4. Inform people objectively about the pros and cons of nuclear energy.
5. Research alternatives (nuclear, hydrogen, etc.) to natural gas and educate people on why these are important.
6. Evaluate "Water for Gas (Fuel)" technology for gas and diesel vehicles and farm tractors and advise the public of results.
7. Use of air-to-air heat exchanges in mushroom growing for peak shaving.
8. Identify effective systems for use of water for fuel technology to use on existing vehicles.

Energy and Mining: Define and communicate issues and options around Marcellus Shale gas and other mining efforts.

1. Facilitating meetings and information to the ag sector on the natural gas drilling and effects to ag property.
2. Continued support of the Marcellus gas exploration.
3. The explosion of gas well drilling (Marcellus shale) and the waste product produced must be controlled to create only positive impacts.
4. Support the needs of the commonwealth related to natural gas drilling and the mining of coal.

Partnerships: Identify and build partnerships to related to bioenergy production

1. Develop a plan in conjunction with a Northeast academic/industry consortium.
2. Develop a region wide supporter/fund-raising plan for multi-level dissemination

Priority Area Entrepreneurship

Forty-seven stakeholders identified action items for the priority area entrepreneurship. These action items cluster around nine themes, which are presented in order from most to least frequently cited: education, business growth, extension collaboration, inclusiveness, marketing, value-added product development, regulatory compliance, local focus and global focus. Specific action items for each theme are presented below.

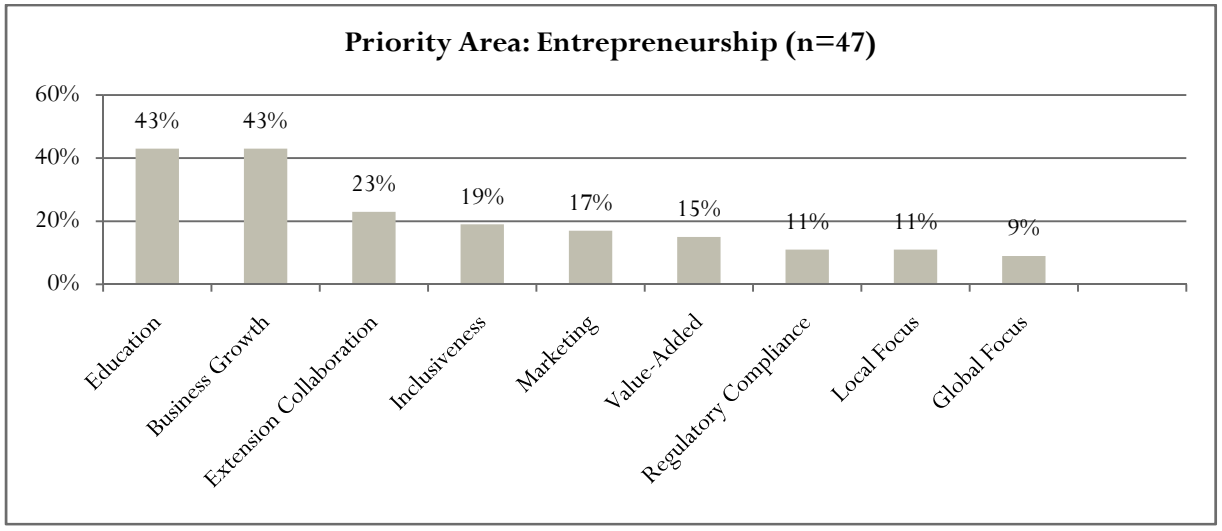

Figure 5. Entrepreneurship themes on which stakeholders would like the College of Agricultural Sciences to focus. Of the 47 stakeholders who identified action items for the priority area energy, 43 percent identified action items within the theme of education, as well as business growth.

Education: Develop and implement youth and resident education curriculum.

1. Finding a curriculum coordinator and faculty who could make an entire major of this type successful would be difficult, even without shrinking budgets would likely result in a reduction of outside speakers, etc.
2. Continue to bring industry into classrooms to both teach and learn what is being taught.
3. When educating students, make it relevant and applicable to the "real" world. Life after graduation.
4. Consider using those in the ag industry as guest speakers and not necessarily the views of faculty or textbooks.
5. Increase efforts to bring established, successful entrepreneurs to campus to share practical, real-world experiences with our faculty, students and staff through informal interaction and formal classroom teaching.
6. Mentoring.
7. Encouraging entry into and possible entrepreneurship in the structural pest mgmt field.
8. Provide casual, relaxed interaction for students with industry experts, business owners, CEOs.
9. Residential and outreach (4H) coursework for youth in entrepreneurship.
10. Educating students, including 4H youth, on business principles and entrepreneurship.
11. Don't forget our urban areas: develop ways to help youth identify entrepreneurial opportunity in the city (providing personal services, etc.).
12. Instruct youth on how to communicate and build relationships, which will help them in business ventures.
13. Connect with K-12 students to engage them in entrepreneurship, nutrition and gardening simultaneously.
14. Leadership and interpersonal development with small groups.
15. Leadership education.
16. I am not sure if we can train students to work with people, but we see a lot of smart, well educated graduates that don't realize that they are going to have to interact with people every day. They can't get things accomplished by themselves.

17. Place lots of emphasis on interpersonal skills – you can never be too good at that.
18. Establishing an entrepreneurship Center will provide a focal point for innovative entrepreneurship training through resident education and extension.
19. Preparing students with a global mindset and education critical for entrepreneurial success.
20. Introduce students to innovative policies and practices in other countries and providing students with opportunity to travel to emerging markets, such as India, China and Latin America will be part of this initiative.

Business Growth: Provide information and assistance for business startups and growth.

1. Teach all students the basics of running a business.
2. Development of online educational modules on business basics for entrepreneurs.
3. Creating basic coursework offered within county extension to teach very basic business development and accounting.
4. Develop a courseware that allows people to understand business strategy, not from a classroom perspective, but from a real world "get it done timely" perspective.
5. Mentoring these startup businesses.
6. Coaching sessions as a low cost workshop for those who have ideas to start businesses.
7. Workshops for business in and up and operating business.
8. Providing services to farmers, businesses to indentify cost of production and profitable endeavors.
9. Connect students with venture capitalists.
10. Income opportunities for agriculture.
11. PA Food Ventures and income opportunities for agriculture.
12. Focus on PA Food Ventures
13. Many local feed manufacturers are small family owned businesses which could be new businesses for the young people to come to as protégés with a plan to buy out and remake the businesses for the future.
14. Income opportunities for agriculture are the key to keeping the farm in the family tradition.
15. A program of enthusiastic encouragement aimed to our reluctant, ill-prepared work force to create a want for improvement.
16. Extension provides education that responds to workforce needs in the areas of child care, nutrition education, food safety and basic work force skills.
17. Telling about the availability of learning opportunities and growth resource availability.
18. Development of online training and educational modules for employee training in nursery production, landscape contracting and retail garden centers.
19. Identifying continuing education courses through the collaborators mentioned above [in strategic plan] and relating those collaborators with PA ag businesses.
20. Develop guidelines and training for large & small food processors and new food entrepreneurs about regulatory practices, nutrition labeling, marketing, workforce development, energy conservation, food safety practices, purchasing of equipment, and business development

Extension Collaboration: Promote Extension for collaborative partnerships.

1. Fully support the Extension Service system already in place, especially Livestock Specialists.
2. Establish a county based plant science educator position as currently no one serves our area in this discipline.
3. Extension based programs.
4. Focus on the cooperative extension concept referenced in the above paragraph [in strategic report summary] with small and medium sized farmers throughout the state of PA.
5. Share knowledge, information and resources with the other "Land Grant Institutions" throughout the U.S.
6. Collaborate closely with the 5 colleges/centers/schools as references above [in the strategic report summary].

7. Encouraging a better collaboration between my industry and PSU.
8. Collaboration.
9. The importance of partnerships – especially with those that are not exactly like us.
10. Conduct a College Open House, not Ag Progress Days and invite businesses to come to campus to see current research and curriculum.
11. Helping ag businesses work with Extension and outreach to cross over to rural development governmental organizations.

Inclusiveness: Be inclusive of all types of agricultural production facilities.

1. Definition of local is not the same for all enterprises and local does not always mean better. Commercial, large scale production should be included in research goals as well as shared thru programs on sustainable farming.
2. Make this all inclusive of animal agriculture. It's not us versus them in the marketplace. Please include commercial size animal agriculture in the group. I noticed is only said small and medium sized farmers.
3. Keep commercial agriculture in a positive light – communication, communication, communication.
4. Share new ways to bring animal feed and care items together for the growing population who want to be a part of growing their own food.
5. All of animal agriculture is worth sustaining in PA. Don't overlook the commercial, advanced animal agriculture sector!
6. Reach out to existing entrepreneurs, particularly in fair food sector.
7. Must be tied in farm-based examples, presented via a core ag print medium.
8. How all sizeable animal agriculture businesses can survive.
9. Production agriculture on a small scale.

Marketing: Provide assistance in developing marketing strategies.

1. An assessment tool could be created to pinpoint markets for green county products.
2. Assist niche marketers to tap into current trends such as "local" "natural" "environmentally friendly" etc.
3. Strategic analysis of retail store trends in produce.
4. Marketing analysis and methods of mushroom retail.
5. Extension and PDA need to have a focused message about PA Preferred marketing program that PDA promotes.
6. Develop expertise and disseminate info helpful to small, sustainable ag enterprises marketing direct to consumers.
7. Training in produce marketing alternatives.
8. Food for profit is the educational component to align fairs with their exhibitors and consumers.

Value-Added: Identify and promote opportunities for value-added product development.

1. Extension outreach to small and medium sized farmers to develop value-added products.
2. Educate small and medium sized farmers to develop value-added products.
3. Develop the expertise to assist farmers make the transition from commodity farming to value-added farming for local markets.
4. Develop online educational modules to help farmers make the transition from commodity farming to value-added farming for local markets.
5. Training in developing value-added products.
6. Work more closely with small and medium farms to add value added products and marketing them.
7. Improving the food processes to improve and maintain fresher products.

Regulatory Compliance: Define and assist with compliance strategies around government policy and regulations.

1. Bring in career government employees to help students understand how to traverse the maze(s).
2. Government relations and international concerns
3. Food regulations, food policy issues and keeping current in the ever changing world of food politics.
4. Food regulations, food policy issues and keeping current in the ever changing world of food politics.
5. Government relations and international concerns.

Local Focus: Identify and promote local community and economic development opportunities

1. Rediscover the power of "local" which was in fact the key word of this initiative when it left the planning committee. No offense to those who believe that all solutions must be considered "global," as this now emphasizes, but this initiative needs to lose some of its historical inertia and get more creative – it's already dated.
2. Develop ongoing research initiatives on the development of local economies and community-based supported ventures…including even BIG communities like Philly or Pittsburgh.
3. Strategic planning for localized and/or regional food systems that aim to measure specific results economically, environmentally and socially in an ongoing way.
4. To support the green initiative emphasis should be to develop growing and manufacturing as close to the market as possible and use less energy for the transportation to market.
5. Tie in with some local organization, such as Pickright equipment (who on their own and with extension help developed their own line of new equipment in Lewisburg).

Global Focus: Identify and promote international and global competitiveness opportunities.

1. Help government and business leaders realize broad and ambitious goals that enhance Pennsylvania's global competitiveness.
2. Working with businesses to develop foreign markets and identifying grants that could help establish those markets.
3. Introduction to international opportunities.
4. While keeping an eye on the global markets, maintain focus on PA or Northeastern projects.

Priority Area Food, Diet and Health

Fifty-one stakeholders identified action items for the priority area food, diet and health. These action items cluster around six themes, which are presented in order from most to least frequently cited: healthy eating, food safety, education, agricultural literacy, community partnerships, and healthy foods marketing. Specific action items for each theme are presented below.

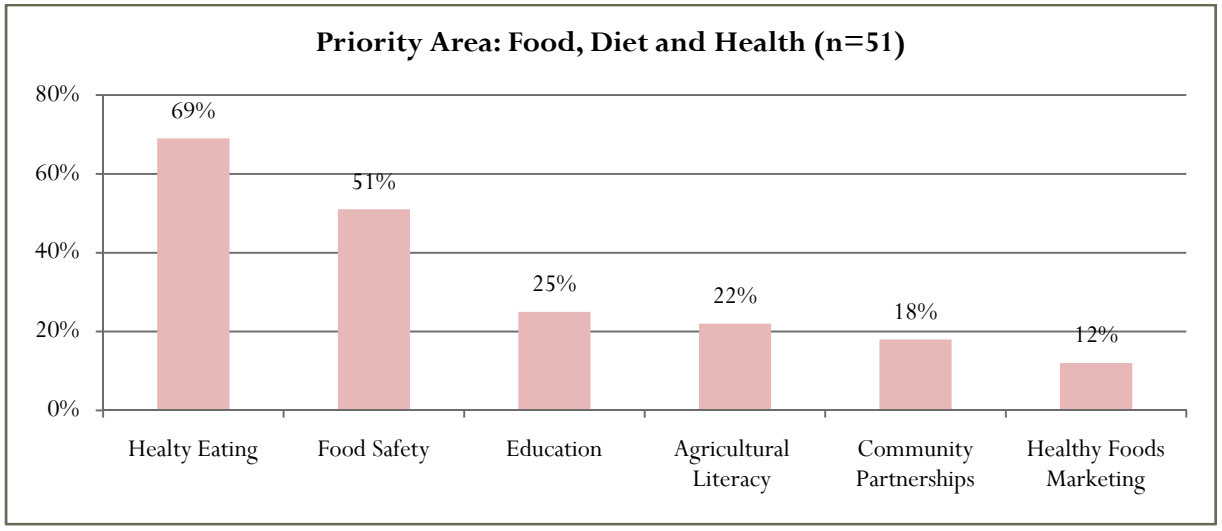

Figure 6. Food, diet and health themes on which stakeholders would like the College of Agricultural Sciences to focus. Of the 51 stakeholders who identified action items for the priority area energy, 69 percent identified action items within the theme of healthy eating.

Healthy Eating: Evaluate, define, and communicate the nutritional value of various foods to promote healthy eating.

1. Nutritional meals.
2. Improve web site information on nutrition. Perhaps develop week-long nutritionally balanced menus.
3. Work with food chains to advice on the nutritional value of fresh farm products.
4. First we must determine what is healthy/unhealthy. Take these accurate studies and make them available through media endeavors.
5. Foods that enhance health.
6. Specific focus to support a food system that improves people's quality of life (quality defined).
7. Use science based information to tell a consistent story. Vegetables are good for you in any state, fresh, canned or frozen.
8. Importance of Vit D in food - Should as Mushrooms.
9. Foods as they relate to sustaining health associated with diseases, ie. Diabetes, obesity.
10. The impact of eating healthy foods as it impacts our overall health care system.
11. Link the importance of grain production in PA to protein production in PA for local food sourcing.
12. Carefully define nutritional alternatives, i.e. not the "truth," which of course is always subject to change. Take and if/then approach with Extension outreach (i.e. if you choose that, then consider this)
13. People must be educated that choice in foods such as organic versus non-organic does not means one is good and the other is bad. Both the producers and consumers need educated on this point for all choices
14. Maintain true science in research and published papers, e.g., fresh-cut, frozen vegetables have more nutrition than many "fresh" vegetables on produce stands.
15. Show the proper nutrition of animal based proteins needed for sustainable life.

16. Enhancing mushroom nutritional values to consumer (like adding vitamin D).
17. Medical values of mushrooms.
18. Comparative analysis of mushroom values against other food groups within produce or commodities.
19. Childhood obesity and disease prevention.
20. Work to educate people in making better choices to live healthier lives by providing evidence-based community nutrition education programs.
21. Nutrition education.
22. Community-based nutrition programs
23. PA Tracks Program.
24. Nutrition Links.
25. Eating fresh foods.
26. Healthy vending machines that are easily accessible.
27. Diabetes rates in each county and studies of health in individual counties and the positive and negative habits of these counties to give their influence on overall good health rates.
28. Parenting skills updating to promote better health and better citizens.
29. Basic cooking/ nutrition skills are provided but the public desire to attend these classes must be increased.
30. Exercise/ good nutrition link for healthy living.
31. Integrate nutrition education with entrepreneurship and gardening.
32. conduct cooking demos in high visibility areas such as grocery stores and farmers markets
33. On-site programs for health and on-site or workshop on food.
34. Exercise programs to join others and team work.
35. Reach limited resource audiences.

Food Safety Practices: Develop, improve, and promote implementation of food safety practices

1. Continued support for food safety initiative.
2. Initiate a food safety team in each of the Ext regions to provide that info to all food handlers, restaurants, as well as community groups who prepare and sell food as fundraising events.
3. Work under food safety umbrella, but utilize existing educational pathways. Innovate, not reinvent.
4. Food safety practices.
5. Food Safety training for individuals and families.
6. Develop and promote training and education programs on food safety for restaurant and food service operators, for retail markets and for food processors.
7. Provide a communication link with grocery stores, convenience stores, fast food outlets and the PA Restaurant Association on proper food safety and food handling practices.
8. Food safety.
9. Food security - education on Mushroom Good Agriculture Practices.
10. Support for produce growers to implement Good Agricultural Practices
11. Development of practical and effective food safety practices for produce growers
12. Disease prevention in food handling.
13. Food will never be a sterile product so we need to be teaching in terms of risk reduction, risk management, etc.
14. Food regulations and industry standards as they change.
15. Food safety is critical to the survival of fairs. College and state need to communicate.
16. Food Laws and regulations (federal, state and local).
17. Recall alert systems for consumers.
18. Publicize the existence of the professional organization--The Central Atlantic States Association of Food and Drug Officials whose primary purpose is to promote and foster uniformity of laws affecting foods, drugs, devices and consumers.
19. How food safety impacts medium and small processors and packers.

20. Find a way to prevent food viruses from living in food products.
21. Foodborne illness.
22. Food sanitation.
23. Enhance research and education in food safety and security.
24. Identification of disease states.
25. Support for food production and processing but will increasingly look at the upstream and downstream consequences for the environment and at consumer health and well-being.
26. Species research/breeding to extend shelf life of fresh mushrooms.

Education: Focus on K-12 and resident education to engage students about health and nutrition education.

1. Build PSU healthy diet recommendations into elementary classroom and pair it with the benefits of today's modern agriculture.
2. Develop a program team to reach all youth groups in each county of Pa. (4-H, Scouts, schools, etc.
3. Produce curriculum materials for el-hi schools to use in health class.
4. Reintroduce the food pyramids into the classrooms at the elementary, middle, junior high and senior high school levels. Kids need to develop good eating habits from the beginning…not trained to change behavior as a young adult!
5. Develop healthy snacking options and classes that will enable youth to make smart choices.
6. Don't forget to teach youth the benefits of exercise…
7. Connect with K-12 students to engage them in entrepreneurship, nutrition, and gardening simultaneously.
8. Enhance elementary education on healthy diet.
9. Salad bar in every school - Farm Bill funding.
10. Development of a broader understanding of the food system within resident education can be achieved through cross-college seminars and online courses.
11. Teach the importance of proper care of food products at home so as entrepreneurs, students can advise customers.
12. Education in the classroom about agricultural commodities.
13. Eating nutritionally while attending college.

Agricultural Literacy: Focus on consumer awareness and agricultural literacy

1. Educating the public where food comes from.
2. Support all facets of food production for the unique qualities they provide; provide consumers with choice but let them decide.
3. Communication to the general public about the true role that commercial agriculture plays in the total food system. Separate the truth and the myth.
4. Biggest need here is strong commitment to open, unbiased research and discussion to get at the deep issues involving food where intelligent people and even science can find disagreement. Not sure what "action item" to attach to that.
5. Educating the public on the pros & cons of modern agricultural production so the whole story of American ag is told, not just the side of activist groups.
6. Need to pursue urban education for consumers about Pennsylvania produced food products.
7. Articulating to consumers choice about food grown locally versus from abroad.
8. Provide information on the environmental costs and benefits of all food production systems.
9. Educating the general public on how the numerous safeguards currently in place to protect the food supply.
10. Take an active role in preserving the right to farm and grow quality food.
11. Any help to the small producers of ag based foodstuffs, marketing food safety, public awareness.

Community Partnerships: Develop community partnership to disseminate information about food, diet and health.

1. Understand that Cooperative Extension cannot be all things to all people.
2. Work with church groups and other civic organizations on promoting healthy diets.
3. Community partnerships to disseminate nutrition education, ie with pre-schools & library programs.
4. We [fairs] have the opportunity to exhibit and tell the story of healthy foods.
5. Food production & processing is our [fairs] bag, and we need to tell the correct story.
6. Local groups must be involved to educate the masses.
7. Balance needs to be maintained in this area; education, research and extension programs. Don't create too much overhead!
8. Insist on collaboration between different branches of the university working on nutrition, production, processing, hospitality and other retail aspects of the food system.
9. Tie together healthy food concepts with meals on wheels and other senior citizen subsidized food programs.

Healthy Foods Marketing: Work with producers and local businesses on marketing strategies to provide more communities with access to healthy food products.

1. Use of Extension as the knowledge disseminator for small ag practices.
2. Marketing healthy food options for small scale food producers and entrepreneurs
3. Providing a short course (something like the Ice Cream course in January) for outside (industry) individuals to come in would seem worthwhile.
4. Work to help farmers markets gain traction in underserved communities.
5. Develop more local businesses to meet needs of healthy foods and nutrition choices for families.
6. Extension needs to work with existing producers to open new markets of healthier new food products.

Priority Area Pest Prediction and Response

Forty-six stakeholders identified action items for the priority area pest prediction and response. These action items cluster around nine themes, which are presented in order from most to least frequently cited: control strategies, forecasting, extension education, collaboration, identification, animal agriculture, infectious diseases, bioterrorism. Specific action items for each theme are presented below.

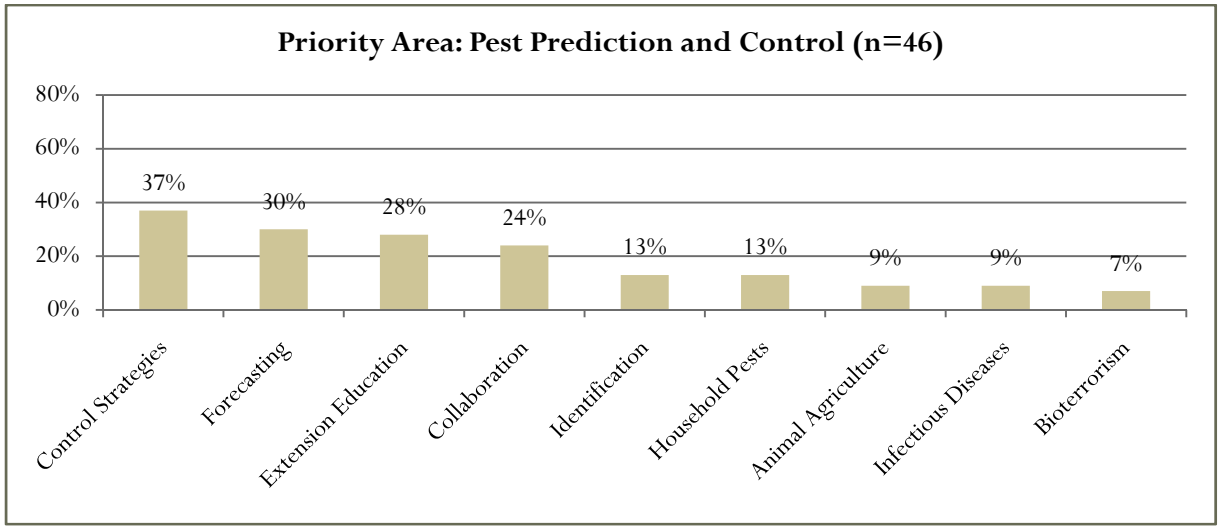

Figure 7. Pest prediction and control themes on which stakeholders would like the College of Agricultural Sciences to focus. Of the 46 stakeholders who identified action items for the priority area energy, 37 percent identified action items within the theme of pest control strategies.

Control Strategies: Research, compile and share integrated pest management and control strategies.

1. Research into elimination of pests that cause damage to crops.
2. Increase strength at UP on pathology/biology of grape diseases.
3. Develop and monitor new sustainable methods and materials for pest and disease control.
4. Evaluation of pest control methods.
5. Work at proactive and cost-effective ways to isolate and control outbreaks.
6. Consider other "pests" from the point of view many producers, including for instance cross-contamination of GMO crops with conventional or organic and also development of chemical/treatment resistant weeds/pests of all kinds.
7. Chemical ecology.
8. Proactive and cost effective prevention and control to limit economic damage .
9. Interaction of control agents used as routine measures of pathogen control, ie. Imidacloprid on food crops.
10. Emphasis placed on integrated systems and use of bio-controls wherever possible.
11. Anything to foster plant diversity in small and large scale agriculture.
12. Improve on sustainable & production agricultural relationships.
13. Make organic systems research a major priority of the college.
14. Integrated structural pest management including pesticides
15. Need to have industry and Extension meetings on new ways to control pests and diseases
16. Provide more practical farm programs or solutions for disease/pest control, not just theoretical.
17. Farmer education and constant updating of new technology.

Forecasting: Develop, enhance, and implement methods of forecasting and monitoring of pests.

1. Continue to search for faster, more accurate tests for monitoring animal health and food safety.
2. Anticipate and manage pest damage from climate change conditions. i.e., wet spring and summer…how to anticipate and cope with the insect problems that will ensue.
3. Continuation of tomato and potato disease forecasting and sweet corn insect pest monitoring.
4. Leveraging our strengths in modeling.
5. Leveraging our strengths in modeling and plant disease biology.
6. Development of a comprehensive system of forecasting/monitoring other vegetable diseases/insect pests.
7. Prediction and identification of resident and non-resident plant pathogens for local major farm/food crops.
8. Continue to improve pest forecasting and modeling research.
9. Modeling diseases of specialty crops, especially wine grape diseases in Pennsylvania.
10. Interactive disease modeling of wheat, soybean and corn diseases within the state.
11. Pest forecasting
12. A predictability model for the onset of viral and bacterial infections carried by parasites affecting wild populations and the ability of these infections to transfer to domestic populations of animals.
13. Training specifically on the way threats are spread involving the citizens themselves in a key in understanding the issue.
14. Develop system of identifying and assessing threats from invasive species so that public programs can be effectively targeted.

Extension Education: Focus on continuing education to communicate to diverse audiences about pest management issues.

1. Know who your target audience is. Develop clear, simple and sweet communications for them.
2. Keep "pandemics" in perspective, i.e., 36,000 US citizens die from normal influenza each year.
3. Where better to tell the story of scientific advances in pest control [at fairs].
4. Show a positive relationship with animal, plant, and human health with advanced technology in pest control.
5. Be consistent with information based on scientific information.
6. Enter with caution.
7. Crisis communication and the use of it.
8. Don't always believe what you see on the television.
9. Produce materials that can be presented via webinars, podcasts, etc. to discuss the most important topics in this area
10. Educate youth and families about IPM issues.
11. Penn State is already a respected resource here [Pest Prediction & Response] in Pennsylvania we need to continue our role state, nation, and the world.
12. PSU must continue to be unbiased in all its research and extension activities. Credibility should be promoted as the most important commodity for all faculty, research, and programs.
13. We need somehow to be able to communicate to potential ag students that this area of Ag studies is important and critical to the future of our economy and that they don't have to be a farmer to be involved in the agriculture community. Student recruitment.

Collaboration: Collaborate with and support existing research teams, centers and institutes for strengthened interdisciplinary approaches to pest prediction and response.

1. Support present teams and build new teams.
2. Support existing centers and institutes.

3. Place special emphasis on enhancement, coordination, and facilitation of team efforts across research, teaching, and extension toward the protection of plant, animal, and human health.
4. Support of and contribution to existing centers and institutes.
5. Reward team & cross-functional department collaboration for research, teaching, and extension for protection of plant, animal, and human health.
6. Strengthen interdisciplinarity across disciplines in pest research, education, and extension education.
7. Work more directly with USDA, APHIS, PPQ and the state Dept of Ag on methods and procedures to prevent the spread of unwanted pests.
8. Bring in these agency people to teach classes on exotic and invasive pests, their movement, impact etc.
9. Use the Pennsylvania Egg Quality Assurance Program as successful model between academia, government and industry.
10. Continue to support existing centers and institutes
11. Are you trying to cover too many areas listed in the first paragraph? Again, can't be all things to all people!

Identification: Assist growers and public on identification of pests

1. Need to work closer educating PA producers on identification of pests and diseases in PA.
2. Educate people about where to go for help detecting these things….you don't have to make the people experts at figuring out what the problems are, but teach them by whom they can be detected.
3. Make more information available online, and search-able so that people can try to do self-diagnostics.
4. Making experts known to the private industry. Who can I call for info & advice on crop diseases?
5. Improve use of internet to make information specific to PA regions. Even by zip code, available on demand.
6. Develop system of identifying and assessing threats from invasive species so that public programs can be effectively targeted.

Household Pests: Research and share improved knowledge about household pest management strategies.

1. Improved household sanitation that reduces the need for interior pesticide applications
2. Improved knowledge of basic household pests - destroyers of food & fabric, disease carriers & aesthetic pests
3. Improved knowledge regarding controlling and minimizing head louse infestations in homes and schools
4. Resident animal/insect pests as they relate to home owners and legal control measures.
5. Improved methods of identification of bedbugs for PA travelers
6. Improved knowledge of the behavior, habits and control of bedbugs

Animal Agriculture: Research, compile and share information about pest prediction and control in animal agriculture.

1. PSU must have a strong background on animal welfare and the benefits of modern production practices. Our industry is under assault from animal rights organizations who exploit emotions at the expense of the facts to shut down our industry. Academics must be actively involved in the debate of animal rights.
2. Animal agriculture needs research and solutions in fly control. Issues are only growing as developments grow closer to livestock, dairy and poultry farms.
3. Basis to eliminate fly populations in animal agriculture
4. More complete knowledge concerning the effectiveness span of vaccines given to our animals and possible negative results for minimal vaccine exposure and more frequent administration.

Infectious Diseases: Research, compile and share information about infectious diseases and connection between animal and human health

1. Infectious disease.
2. Infectious disease identification.
3. Importance of immunization.
4. Research in identifying etiological factors for infectious disease control.

Bioterrorism: Educate broader audiences about potential bioterrorist threats and prevention.

1. Focused research on potential bioterrorist threats and prevention affecting crop, livestock, and forest production.
2. Traceback/recall technology in response to bioterrorist threats or illness due to foodborne illness or outbreak.
3. More education on potential bioterrorist threats affecting our crop, livestock, and forest production.

Priority Area Water Quality and Quantity

Forty-seven stakeholders identified action items for the priority area water quality and quantity. These action items cluster around six themes, which are presented in order from most to least frequently cited: water conservation, on-farm and industry best management practices, contamination sources, water guidelines, resident education and green building. Specific action items for each theme are presented below.

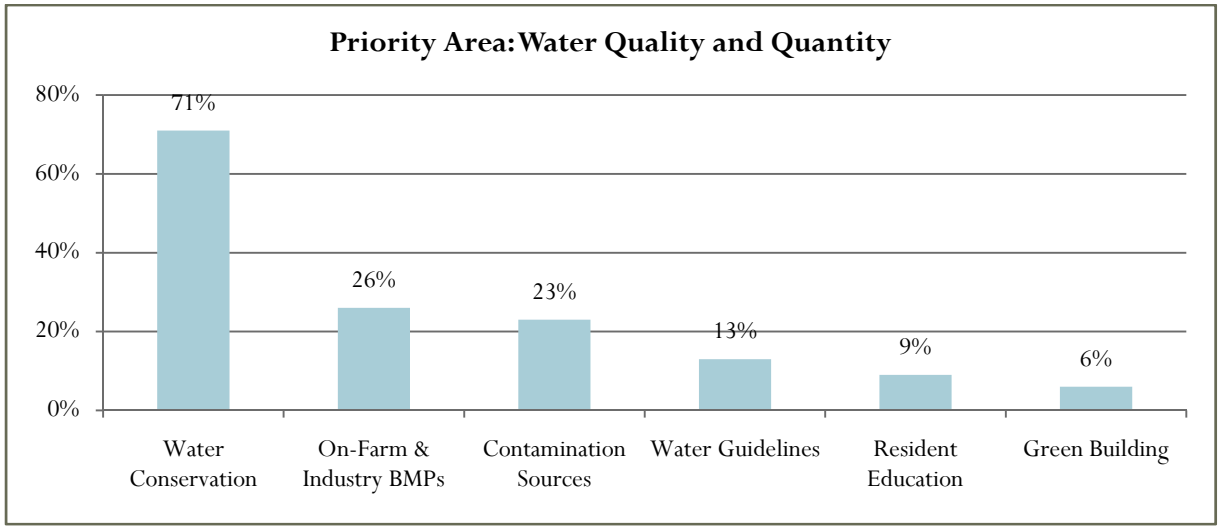

Figure 8. Water quality and quantity themes on which stakeholders would like the College of Agricultural Sciences to focus. Of the 4 stakeholders who identified action items for the priority area energy, 71 percent identified action items within the theme of pest water conservation.

Water Conservation: Evaluate, develop and communicate water conservation practices.

1. Rain barrel education.
2. Water conservation.
3. Continue to work with Extension Educators on programs on water conservation and water quality.
4. How do we best re-use water.
5. Share ideas on how to provide greater water conservation through the state of PA.
6. Conservation of water.
7. Educate students and communities about water conservation
8. Develop household guidelines for usage per individual with measuring devises to bench mark. Create a "Water School" as an outreach option tailored to audiences of farmers or non-farms, and perhaps both together. So much for everyone to learn on this subject…
9. Educate-without water we have no food or environment.
10. Need to help educate the public how agriculture utilizes water and stewardship of the resource.
11. Extension programs for the public.
12. Teaching materials for schools and take home pamphlets for the family.
13. Take the program public.
14. Understanding of how water is not a renewable resource.
15. Use various media (TV, web, print, etc.) to make water quality improvements actionable for the individual person.
16. Give examples, everyday things people can relate to in classes (again, get the word out to kids at a younger age).
17. Educate employees as part of their employment.

18. Information for home owners with individual water wells.
19. Discuss further the balance of land use and water through the state of PA.
20. Again, don't forget our urban areas…give them practical ideas to improve the water quality in cities.
21. Improved recognition of means to reduce homeowner, "do-it-yourself" run-off from entering water sources.
22. Be able to separate the activists from the people that truly want to have a positive impact on water quality.
23. I agree about water quality and quantity is an area of focus moving forward
24. Extension educators conduct programs on water conservation, household water quality, and drinking water protection.
25. E-coli is an issue which casts fear at every fair, not necessarily tied to water quality but to cleanliness.

On-Farm and Industry BMPs: Research, develop, and promote implementation of on-farm and industry best management conservation practices.

1. Do more work on farmland water recharging.
2. Increasing cover crop usage on corn silage acres, evaluating new no till techniques
3. Educate farmers on why riparian buffers are beneficial to them, not just the environment
4. Focus on increasing crop yield (through better variety selection and fertilizer placement) rather than nutrient application reductions as a way to address Chesapeake Bay concerns.
5. Provide more information and techniques for erosion control; if we can't stop large particles from entering the waterways, how will we stop molecules like N and P.
6. I am disappointed when driving in the country side to see poor nutrient management on our farms
7. Harmonize food and fiber production with environmental goals.
8. The college's Environment and Natural Resources Institute and the Agriculture and Environment Science and Policy Center work at harmonizing food and fiber production and processing with environmental goals.
9. Use of copper ionization or ozone for irrigation water sanitation to prevent foodborne illness outbreaks
10. Need to help agriculture industry identify areas of water saving opportunities.
11. Need to educate agricultural producers to be more progressive on water management
12. Optimization of irrigation water use.
13. Water conservation practices in mushroom composting and growing.
14. Be sure to credit production agriculture with their role in maintaining large land areas for recharging groundwater supplies.
15. Continue to support the Environment and Natural Resources Institute.

Contamination Sources: Research, compile and share information regarding sources of water contamination.

1. Continue to study the impacts on water quality from non-agricultural sources
2. ID sources of pollution
3. Improved recognition of non-public water systems that may potentially be contaminated by pesticide run-off.
4. Interaction of pesticides and drinking water sources.
5. Contamination of water resources with coliform bacteria and pesticides.
6. Stop supporting the use of pesticides -- this too is a water quality issue.
7. Drilled wells and water plants are a constant issue in regard to contamination and chemicals.
8. Chesapeake Bay clean-up is a reminder to Marcellus shale and the drilled wells. Are we going to make the same mistake?
9. Stop supporting drilling in Marcellus Shale -- this is a water quality issue.
10. More study predicting the effects on drinking water and soil absorbing the runoff from our mines and gas wells.

11. Chesapeake Bay issues
12. Focus on what needs to be done to bring protection around lake and stream shorelines and make it happen.

Water Guidelines: Research, compile and share information about water guidelines and regulations and promote science-based policy.

1. Some regulations require water to be consumed to meet a standard. Change regulations.
2. Develop consistent guidelines for water usage in industry based on best practices and publicize for other companies to bench mark
3. Research is important but taking that information and enforcing regulations through Natural Resource Institutions is probably more important than the major amount of dollars spent.
4. Lobbying for enforcing environmental initiatives.
5. Work with the PA Dept of Environmental Protection and their Water Quality Program managers on well construction, water distribution systems, and water quality standards.
6. Develop programs on water rights and educate local government on land use impacts on water quantity.
7. Be careful of the issue and bias of climate change in research, teaching and education.
8. Use science instead of political & social demands to justify positions, input, feedback and response to challenges to water quality & quantity.
9. Make people aware of the current federal legislation pending entitled the Clean Water Restoration Act (S787).
10. Rewards for those who incorporate water quality and quantity.
11. Establish a water quality team (of local people & officials) in each location in one pilot county in each of the Ext. regions.

Resident Education: Improve resident education to provide students with increased exposure with regards to water quantity and quality issues.

1. Our students need more exposure to systems thinking and analysis.
2. Students need more exposure to systems thinking and analysis as defined in the three systems forming the organizational foundations of this plan.
3. Require soil and water conservation training in EVERY Ag Science curriculum.
4. Become more aggressive in seeking out internships.
5. Undergraduates need practical and applicable science and technology once they graduate.

Green Building: Develop resources to educate about and assist organizations with green building planning.

1. Develop data regarding the impact of plants and managed landscapes in improving water quality
2. Develop BMP's for the use of plants, trees and turf grass in landscapes, highways, commercial development (all development) to improve water quality
3. Develop online resources and educational programs to disseminate this [green building] information to governments, developers, homeowners and green industry professionals.