

**The Department of Dairy and Animal Science**

**College of Agricultural Sciences**

**The Pennsylvania State University**

**Strategic Plan**

**2009-2013**

**Prepared and Submitted**

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**Department of Dairy and Animal Science  
Strategic Plan  
2009-2013**

**Executive Summary**

The Department of Dairy and Animal Science routinely engages in strategic discussions about the spectrum of our programs to determine whether they need to be “remodeled”, or new programs need to be developed to meet identified needs. Inherent to this process is appreciating that change occurs, and that we need to be proactive in identifying new opportunities to pursue. The need to consider new ideas and to push ahead strategically and decisively is engrained in our departmental operational understanding. Our faculty and staff are encouraged to pursue new ideas in the spirit of sustaining and growing our excellence. This Strategic Plan presents our strategic approach for sustaining and growing our excellence. Our mission is:

***To serve society by providing leadership and learning opportunities  
in the discovery, dissemination and application of the knowledge of animals  
by working with others in education, industry, government and agriculture.***

During the next five years we will address our mission through these goals:

1. We will sustain our efforts to be recognized as the preeminent Department among our peers in the United States.
2. We will conduct innovative fundamental and applied animal science research that will be of high quality, authoritative and of benefit to our clientele and society.
3. We will continue to enhance one of the elite undergraduate animal science programs in the country, educating students who are creative, effective at problem-solving, facile in their oral and written communication skills, and valuable contributors to the improvement of animal agriculture.
4. We will continue to grow and develop our graduate program, educating students who are creative, effective at problem-solving, facile in their oral and written communication skills, and valuable contributors to the improvement of animal agriculture.
5. We will be the preferred source in the region for valuable, timely and comprehensive information to support our clientele in their understanding, decision making, and practices regarding animal agriculture.

## Preface to the Strategic Plan

This document presents the strategic objectives of the Department of Dairy and Animal Science. The draft Strategic Plan was written by the Head of the Department, Dr. Etherton, and subsequently reviewed by the Departmental Advisory Committee prior to distribution to faculty and staff for their input. A core component of our planning process is reliance on an ongoing planning process in the Department in which Dr. Etherton meets with various faculty and staff groups in the Department to get input and feedback about strategic directions, accomplishments, and issues that need to be addressed. Input from our stakeholders in the Commonwealth is important to our future. We believe that the Department is the model Academic Unit in the College for effective, ongoing, and proactive partnering with our various stakeholders (see Appendix A for list of our stakeholders). Collectively, this input (received by Dr. Etherton at many meetings in the Commonwealth and on campus) has been formative for the development of our Strategic Plan.

It is important to appreciate that the Department is clearly among the most diverse in the College *and* University with respect to our teaching, extension and research functions. In addition, the Department maintains several farms [Beef (includes Beef Center, Haller Farm, Houtz Farm), Dairy Center (includes Almquist Research Center), Deer, Horse, Sheep (includes Farm 5), and Swine] that house animals typically used in animal agriculture that are very important for our teaching, research and extension programs (a map of our farm locations is presented in the Appendix). The Department also has a Meats Laboratory, a USDA inspected facility, that is used for various meat science and meat safety research, teaching and extension programs. We also operate a retail meat store during the academic year at the Meats Lab. Because of the scope of these operations and their impact on the Department budget, there is an active and dynamic business management process in place that monitors revenue and expenditures associated with operating these units.

Going forward, an issue continues to be whether any of the farm units will be relocated. We envision that the University expansion will continue, and that this growth will move in the direction of some of our farm units. The location of the recently completed Law Building and the “soon-to-be-completed” Arboretum at Penn State illustrate this trend. Over the past 15 years,

construction projects such as the I-99 project, the Penn State/Research Park complex, the Centre County Visitors' Center, and the Penn State baseball field (Medlar Field at Lubrano Park) are examples of projects that have encroached on our farms, and had an adverse impact on our farm operations. In addition, the proposed expansion of the Mount Nittany Medical Center will take land away from our farm operations.

Over the past 12 years, the Department has made great strides in sustaining and building our excellence across the broad portfolio of programs we offer. We believe the future of the Department is bright. Our programs are widely recognized, both nationally and internationally. As always, we embrace the philosophy of aggressively seeking new opportunities to sustain and grow the excellence of DAS.

## College Strategic Initiatives

The College of Agricultural Sciences has submitted its Strategic Plan ([http://strategicplanning.cas.psu.edu/2008\\_2013/](http://strategicplanning.cas.psu.edu/2008_2013/)) to the University. The College Plan provides an important context for the discussion and presentation of our Strategic Plan. A focus of the College Plan is on five strategic initiatives, is presented below. Some of the College initiatives (i.e., Energy and Pest Prediction) only minimally “intersect” strategic goals that are the focal point of our departmental Strategic Plan. This is to be expected given the breadth of college programs. However, much of our strategic focus is germane to the other three College initiatives (Entrepreneurship, Water Quality and Quantity, Food, Diet and Health). The Strategic Plan we have developed is consonant with these College initiatives, and meets the needs of our undergraduate and graduate students, our teaching, research and extension programs, as well as the many organizations and commodity groups with whom we interact (see Appendix A for a list). Importantly, we have developed our strategic initiatives to best position us to sustain and grow our success in the future, and do this with the reality that there are great opportunities to pursue.

### College Strategic Initiatives

- Energy
- Entrepreneurship
- Water quality and quantity
- Food, diet and health
- Pest prediction and response

### *How programs in the Department align with College Strategic Initiatives:*

A number of ongoing programs in the Department align with the College Strategic Initiatives, primarily Entrepreneurship, Water Quality and Quantity, and Food, Diet and Health.

## Entrepreneurship

Our program is steeped in a variety of entrepreneurial programs. You will find examples of entrepreneurial activities in teaching, research and extension. Inherent to our many ongoing research and extension programs is the need to be entrepreneurial to build programs of excellence that attract extramural funding and develop extension programs that gain regional and national acclaim. For example, our dairy extension programs are widely recognized for developing innovative and entrepreneurial programs that meet the needs of the PA and U.S. dairy industry.

Our students are exposed to a variety of learning activities that embrace entrepreneurship, either in several classes or via participation in the five student clubs that we advise (this is discussed later in the strategic plan). For example, we plant the seeds of entrepreneurial thinking early in their programs by exposing students to entrepreneurs and those successfully employed in animal agriculture (ANSC 290W). We continue this exposure through an excellent selection of 300- and 400-level production classes that strive to build upon and weave the fundamental concepts of reproduction, nutrition, growth, lactation, health and facilities into the fabric of agricultural enterprises. Additional capstone electives at the 400-level seek to instill critical/creative thinking and evaluation skills that use real world examples and enterprise site visits to hone entrepreneurial thinking. Our efforts in this regard are based on knowledge that a key characteristic of most successful entrepreneurs is that they possess a breadth and depth of knowledge of their discipline that reveals strategic opportunities that can be exploited in developing a new agriculturally-based business. Students are offered opportunities to plan, organize and host various animal exhibitions and sales. This includes program development, marketing, promotion and fiscal management. Our students compete nationally, and travel both nationally and internationally. This provides them with a global perspective, promotes networking and develops leadership skills. Honors undergraduates in our department complete semester abroad studies and return to pollinate our students with new ideas and creative approaches to animal agriculture.

Our faculty strive, both in the classroom and through advising student organizations, to promote creative thinking, intellectual curiosity, and leadership skills. We endeavor to provide a

supportive environment where students feel comfortable challenging dogma and reaching beyond their “comfort zones”. We teach them how to learn from their failures as well as their successes.

From a research perspective, entrepreneurial activities are encouraged and valued. During the last five years, four invention disclosures were filed and three patents were filed. We have a departmental culture that understands that inventions that are not properly disclosed and patented are likely to never benefit society. We fully understand the key role our faculty play as the discoverers of new knowledge that leads to new technologies to improve animal agriculture. Faculty are encouraged to articulate and work for application of their research. We engage in frequent interactions with industries, while understanding the critical role the academic science plays as independent, unbiased arbiters conducting and promoting science for the public good. As we move forward, entrepreneurship will be an even larger part of our departmental activities as we strive to prepare our students to become the future leaders in agriculture.

### **Water Quality and Quantity**

The Department offers several courses (An Sc 290W, An Sc 306, An Sc 308, An Sc 309, An Sc 310, An Sc 410, An Sc 418) that include a water quality and quantity (nutrient management component) component. An Sc 418 (Nutrient Management in Agricultural Systems) addresses whole farm nutrient balance, calculation of appropriate manure application rates for various cropping enterprises, calculation of the phosphorus index, manure storage, treatment and application options, and strategies for minimizing nutrient excretion from livestock and poultry.

Commercial manure haulers are trained and certified in sound transportation and application methods for manure in conjunction with state regulations for Act 38 and Act 49. Participants must demonstrate competencies in the calculation of application rates, setbacks from sensitive areas, and accident prevention and response.

A certification program for on-farm environmental stewardship is available to producers who participate in a 3<sup>rd</sup> party environmental assessment of their farm and demonstrate implementation of nutrient management and conservation practices.

Producers who propose new Concentrated Animal Feeding Operations must comply with nutrient management regulations under Act 38. A site evaluation program is available to



producers to help identify the potential for odor conflict, an important component of which includes a variety of concerns associated with the application of manure.

Other research and extension programs that impact water quality and quantity (nutrient management) include programs that focus on precision feeding, anaerobic digesters, manure management, and improvements in productive efficiency. The latter pertains to programs that seek to increase output (i.e., meat or milk) with fewer animals, or enhanced efficiency of nutrient use with a consequent reduction in environmental load. Faculty and staff involved with these projects include: Craig Baumrucker, John Comerford, Chad Dechow, Kevin Harvatine, Jud Heinrichs, Alex Hristov, Virginia Ishler, Ken Kephart, Rob Meinen, Bob Mikesell, Burt Staniar, Ann Swinker and Gabriella Varga.

### **Food, Diet and Health**

The phrase “Food, Diet and Health” has multiple interpretations. It is a fact of long-standing that consumption of healthy diets is important for reducing risk of chronic diseases in humans. Our department is focused on the primary industries of animal production on our farms and ranches. We strive to educate our students on the critical role that the primary animal industries play in both the perception and reality of food safety. For example, we conduct extension programs that address key components in the chain of food safety including training in HACCP (hazard analysis and critical control points) for the slaughter industries, and quality assurance programs that target our key production species, and highlight production practices that promote food safety. In addition, all Pennsylvania youth enrolled in food animal projects are required to attend quality assurance training as an intracurricular part of the 4-H project experience. Faculty and staff involved with these projects include: John Comerford, Dan Kniffen, Bob Mikesell, Ed Mills, Glenn Myers, and Chris Raines.

## History of the Department

The Department of Dairy and Animal Science was formed in 1975 with Dr. B.R. Baumgardt as the first Head. The Department of Dairy and Animal Science was created by merging the Department of Animal Science with portions of the Department of Dairy Science. The Department of Animal Science was formed in 1960 by the merger of the Departments of Animal Husbandry and Animal Nutrition. The Department of Animal Nutrition had as its parent organization the Institute of Animal Nutrition that was formed in 1907. The other merging Department - Animal Husbandry - also was created in 1907. In the early years, many of the teaching responsibilities were assigned to the Department of Animal Husbandry with Animal Nutrition being involved principally with research. The Department of Dairy Science had as its parent organization the Department of Dairy Husbandry, which was formed in 1905. The change in name to the Department of Dairy Science occurred in 1954. For a more detailed history of the Department, the reader is directed to the History of the Department of Dairy and Animal Science that was published in 2004 (visit <http://www.das.psu.edu/history/>).

### Dairy and Animal Science Today

The present-day Department of Dairy and Animal Science is a large and diverse Department with a departmental budget of approximately \$9 million per annum (excluding funds derived from endowments). Currently, there are 26.25 faculty on staff (see Table 1 and the Appendices). We have successfully completed the initial phase of the Reproductive Biology Initiative in the Animal Sciences (hiring seven new faculty in a collaborative initiative with the Department of Poultry Science) - now referred to as the Center for Reproductive Biology and Health (CRBH), now recognized under the Huck Institutes. The number of full-time staff employees has remained stable (Table 1). Fixed-term employee numbers are beginning to increase due to new faculty hiring research and/or post-doctoral support (Table 1). There are 25.5 full-time and technical service employees in DAS who work at the farm units (Table 2; see Appendix B for location of farms). There has been a marked increase in the number of wage

payroll student employees at the farm units since 2005 (Table 2) as we respond to our clients desire to hire graduates with hands-on experience in animal agriculture.

As of FY 08/09, there were 20 graduate students in the Animal Science Graduate Program who are advised by DAS faculty. This number has increased recently due to new faculty attracting students and support provided by grant/contract funding. A summary of graduate assistantship funding provided by the College is presented in Table 3.

One of the realities confronting our faculty with research appointments is the necessity they procure external funding to support their research program. Research funding obtained by faculty and staff between 2000 and 2009 is presented in Table 4. This has been increasing as the result of new faculty hires that have been successful in procuring external funding. It is anticipated that it will continue to increase in the near term, as well as the long term.

The Department of Dairy and Animal Science currently manages 41 active endowments with a market value of approximately \$2.7 million. In addition, there are 10 named, annually funded, scholarships that provide approximately \$40,000 in scholarship support. In 2008, a total of \$82,922 in scholarships was awarded to our students. There are four pending endowments that have been established that have not reached the funding threshold for distribution of monies. By comparison, the Department had 28 endowments in 1998 with a market value of \$1.4 million.

**Table 1. Summary of DAS Staffing (1998/1999 to 2008/2009)**

<u>FY</u>	<u>Faculty Positions</u>	<u>Clerical Positions</u>	<u>Fixed Term Positions</u>
98/99	25	9	17
99/00	23	9	19
00/01	26	9	17
01/02	29	9	24
02/03	27.6*	9	25
03/04	26	9	23
04/05	25	7	23
05/06	25	7	13
06/07	23	7	12
07/08	22	7	14
08/4-1-09	26.25**	7	17

\*One faculty member was on phased-out retirement program.

\*\*One faculty member with split appointment between DAS and Poultry Science.

**Table 2. Demographic Information about DAS Farms/Units**

<u>Farm/Unit</u>	<u>Full-time/Tech-Staff Employees</u>		<u>Wage Payroll</u>		<u>Work-Study</u>		<u>Animal Inventory</u>		<u>Acres in Production</u>	
	2005	3/09	2005	3/09	2005	3/09	2005	3/09	2005	3/09
Beef/Sheep	3	5	10	37	1	1	319	250	400	425
Dairy/ARC <sup>a</sup>	13	13.5	16	39	4	3	468	440	200	150
Horse	2	2	2	19	3	0	77	70	71	103
Sheep	2	N/A <sup>b</sup>	11	N/A <sup>b</sup>	8	N/A <sup>b</sup>	455	200	100	90
Deer	1	1	4	6	5	2	149	111	22	22
Swine	2	2	5	4	2	1	586	550	38	38
Meats Laboratory	3	2	8	8	3	1				
<b>Total</b>	<b>26</b>	<b>25.5</b>	<b>56</b>	<b>113</b>	<b>26</b>	<b>8</b>	<b>2054</b>	<b>1621</b>	<b>831</b>	<b>828</b>

<sup>a</sup>Almquist Research Center

<sup>b</sup>Beef and Sheep Personnel Operations were combined in 2009.

**NOTE:** The loss in overall acreage is mainly due to the Arboretum and the new baseball stadium; approximately 230 acres of pasture are used for football parking

**Table 3. Summary of Graduate Assistantship Funding from the College (FY98/99 to FY08/09)**

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<u>FY</u>	<u>Amount Allocated</u>	<u>Change</u>
98/99	\$289,138	
99/00	\$297,812	3% cost of living increase
00/01	\$308,235	3% cost of living increase
01/02	\$297,482	\$20,000 returned due to recycle; 3% cost of living
02/03	\$306,406	3% cost of living increase
03/04	\$169,734	\$140,000 returned due to recycle; 3% cost of living
04/05	\$173,129	3% cost of living increase
05/06	\$176,592	2% cost of living increase
06/07	\$179,241	1.5% cost of living increase
07/08	\$185,514	3.5% cost of living increase
08/09	\$192,007	3.5% cost of living increase

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**Table 4. Summary of DAS Research Funding (2000/2001 to 2008/2009)**

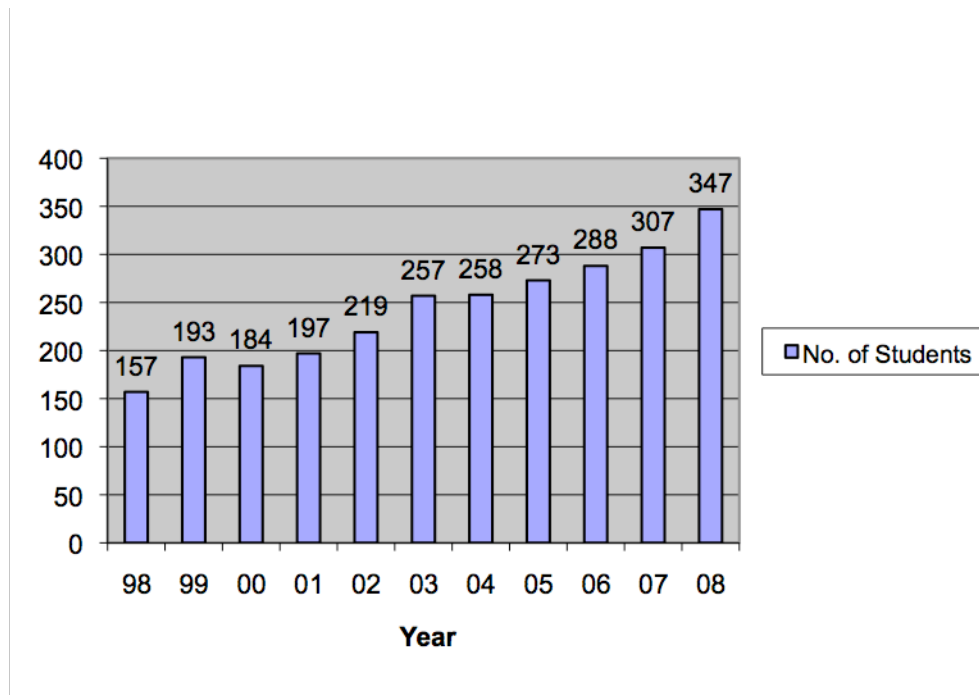
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<u>FY</u>	<u>Contracts (Direct Cost)</u>	<u>Gifts</u>	<u>Total</u>
00/01	\$882,557	\$152,023	\$1,034,580
01/02	\$1,648,773	\$195,721	\$1,844,494
02/03	\$1,155,597	\$218,029	\$1,373,626
03/04	\$1,688,144	\$96,349	\$1,784,493
04/05	\$1,260,341	\$55,147	\$1,315,488
05/06	\$1,276,131	\$91,303	\$1,367,434
06/07	\$1,160,509	\$98,601	\$1,259,110
07/08	\$943,193	\$96,297	\$1,039,490

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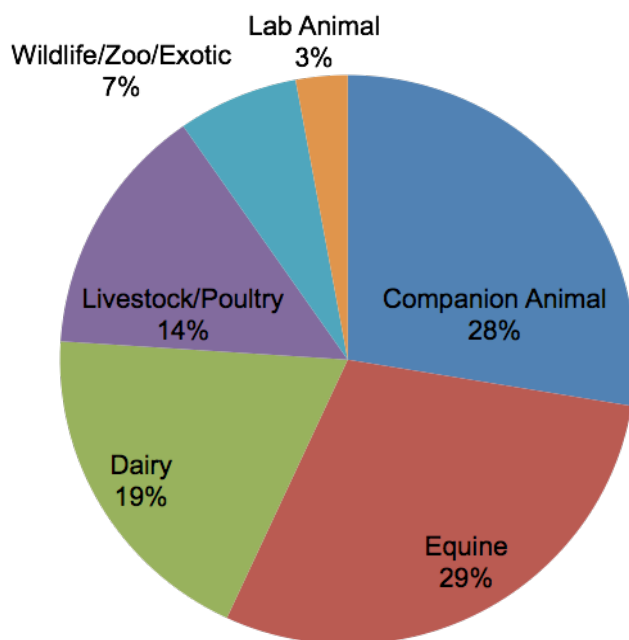
Our undergraduate major, Animal Sciences, has grown remarkably. For example, in 1998, there were 157 majors. Currently, there are approximately 350 majors (see Figure 1). Strategically, our goal is not to dramatically grow enrollment but, rather, maintain student numbers, and recruit students with stellar academic credentials into our major. It is important to emphasize that we could not sustain excellence in our undergraduate program if we attempted to expand our enrollment unless additional resources are provided to hire additional faculty and staff to teach and advise.

The increase in number of students majoring in Animal Sciences has been associated with a shift in the primary species interest of our students (see Figure 2). Approximately 64% of our first-year students have an interest in horses, companion animals (i.e., dogs and cats) or wildlife/zoo/exotic animals. In addition, we manage the largest minor in the College, Equine Sciences (see Figure 3).

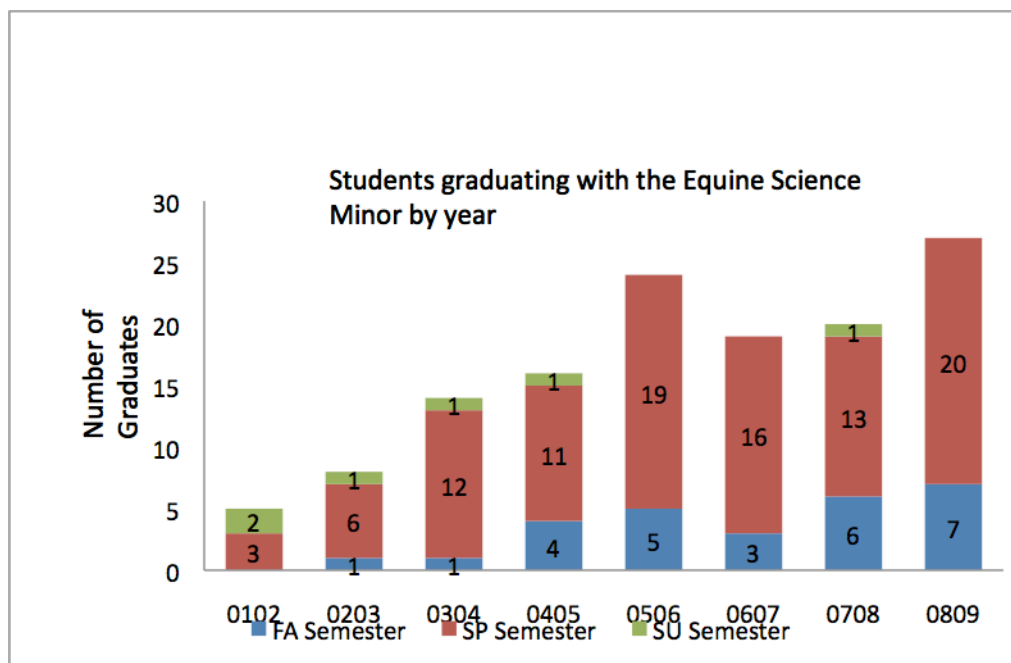


**Figure 1.** Enrollment in the Animal Sciences Major from 1998 to 2008.

### Entering Student's Species Interest (2000-2008)



**Figure 2.** Species Interest of First Year Students in the Animal Sciences Undergraduate Program (the results presented are the composite of information collected from first year students in Animal Sciences; 2000 to 2008).



**Figure 3.** Students graduating with the Equine Science Minor by year

## Mission, Vision, and Core Values

### Mission Statement

To serve society by providing leadership and learning opportunities in the discovery, dissemination and application of the knowledge of animals by working with others in education, industry, government and agriculture.

### Vision Statement

We are leaders in shaping the future of selected areas in animal science through widely recognized programs of excellence in teaching, research and outreach.

### Core values

The Department of Dairy and Animal Science is a research and teaching community that:

- achieves excellence in the scholarship of education, research and extension/outreach
- prepares students to be leaders in society
- stimulates life-long intellectual curiosity
- develops critical thinking and problem-solving skills
- provides leadership for the animal sciences
- embraces creativity, discovery and innovation
- creates, seeks and capitalizes on opportunities to increase productivity, efficiency, and impact
- promotes ethics and integrity
- values tradition while embracing progress
- respects humankind, animals and the environment
- celebrates achievement



## Summary of Strategic Issues

The Department of Dairy and Animal Science has a long history of conducting education (both degree-based and extension/outreach) and research programs that benefit society and animal agriculture. In the future, there will be remarkable changes in animal agriculture in the U.S., as well as the funding base available to departments such as ours. This will impact what we do. A shrinking federal funding base (both competitive and formula funds) to support research and extension programs is, and will continue to be, a major challenge. In some research areas, funding is already problematic. For example, there are important research areas in animal agriculture for which there is little opportunity to procure competitive funding from federal funding agencies. Do we abandon these, or try to find alternative and creative ways to procure the funding? The number of private-sector companies involved in conducting discovery research and product development in the animal sciences and developing products into the marketplace has decreased. This has an adverse impact on the transfer of intellectual properties to the private sector.

These challenges we confront in the Department occur at a time when fundamental change is ongoing in dairy and livestock production in the U.S. A variety of technologies and production economies are moving the various animal industries to fewer and larger production units. Regulatory oversight of air quality and nutrient management has been increasing. It is likely this will increase in the future and, if so, there is the attendant need for these regulations to be “science based”. It is important that animal agriculture develop novel and effective ways to manage manure disposal (i.e., nutrient management), and control odor and gas (such as ammonia) emissions - certification programs will become commonplace on farms in the future.

We are transiting a time where some consumers want more details of specific production and processing practices. In addition, there are ongoing retail marketing efforts to create different food product niches in the marketplace that differentiate products sold on the basis of the production practices used (e.g., organic, free-range, grass fed, natural, etc). In some instances, these marketing efforts are misleading and confusing, and attack the use of science in production agriculture (this is discussed in depth at <http://blogs.das.psu.edu/tetherton/>). In addition, unfounded fears propagated by some in the media or activist groups over animal

disease and food safety have resulted in pressure to trace animal products from farm to consumer. Because one of our mandates is to conduct research and apply science-based discoveries for society, a key question is to what extent should the Department provide sound, science-based information about production practices and use of science to consumers? This is particularly important to counter the many misleading media campaigns that attack animal production practices and the value of animal products in a healthy diet.

Concurrent with the ongoing changes in production agriculture is the fact that the equine industry in Pennsylvania is large and diverse. The equine industry is a major agricultural and recreational enterprise that significantly impacts the quality of life and economy in Pennsylvania. For example, the most recent (2003) Pennsylvania Equine Economic Impact Study (written by DAS faculty and staff) reported that there are 215,693 horses in PA, 31,000 equine operations and 20,300 jobs in the industry. The direct and secondary contributions of the state's equine industry are greater than \$1.12 billion in revenue. This was discussed in our last Strategic Plan, and the need to expand research, teaching and adult and youth extension programs for this industry was the basis for adding an equine science faculty position. There continues to be a need to grow our equine science program.

The Pennsylvania 4-H Horse Program promotes knowledge of horsemanship and responsible equine use, care and management. Benefits of involvement in youth horse programs are documented in research published by the American Youth Horse Council (AYHC) and Penn State University in 2006. Youth in the Pennsylvania 4-H Horse Program were included in this national research project. The study demonstrates the positive impact on horsemanship and youth development from youth horse activities. Participation in 4-H horse programs provides hands-on exposure to Penn State extension for many youth and families. Recruitment of students and promotion of the Department of Dairy and Animal Science is ongoing on state, regional and national levels through 4-H Horse Program activities.

A 4-H Horse Program of \$25 per year was instituted in 2008 (based on total county 4-H horse member enrollment). Funding from this initiative was used to create the 4-H Horse Program Endowment and hire two 4-H horse program extension associates who help maintain and develop youth 4-H programs at the county and regional level. The reality is that we need additional expertise in the counties for our 4-H Horse Program and adult equine extension programs, which necessitates seeking and procuring additional funds.

Our companion animal science program is growing in popularity with our students (the fact that 28% of our students express this as their first species of interest is one illustration of this – see Figure 2). Strategic decisions need to be made about the direction this program will take in the next 10 years. In 2008, Americans spent \$43.2 billion on their pets; of this, \$16.8 billion was spent on food, \$10 billion on “supplies” and over-the-counter medication, and \$12.2 billion on veterinary care. The Department of Dairy and Animal Science has a history of teaching companion animal courses to meet the needs and interests of our student population but has not actively pursued the research or funding possibilities of this industry. Small animal uses in the U.S. and around the world include companionship; therapy; biomedical research; sport/entertainment; and working dogs, including detection (drugs, bombs, contraband, landmines), military, police, search and rescue, and service (those who assist the blind, hearing impaired and physically disabled). A variety of industries and services including veterinary medicine, pet food, pet supplies, training, and animal shelters exist to meet the needs of these animals and their owners and handlers. For these reasons, we propose the addition of positions to meet these needs and opportunities.

Another key issue going forward relates to the strategic direction of our dairy nutrition group, which is one of the foremost programs in the United States. Over the next five years, there will be faculty retirements in our dairy nutrition group. It will be imperative that we be able to fill these faculty positions to sustain our programmatic excellence in this area.

An operational reality for our dairy and livestock extension programs is the need to seek and procure external funding to develop and deliver high quality programs. By virtue of the many extension programs we conduct, we have been very successful. However, the pulsatility of state and federal funding and projected funding trends from these sources require that we continue to seek and grow our portfolio of funding from other sources. One example of the “funding vulnerability” we face is illustrated by the opening we have had in the Director of Dairy Alliance. This position has been open since January, 2008, in part, because of state budget issues.

The Department of Dairy and Animal and Science is a model for engagement with clientele and commodity groups in the College (see Appendix A for a listing of organizations we interact with). The diversity of our department programs including the management of a large farm operations creates many challenges. Our strategic plan was developed with full recognition

of the changes that are occurring in agriculture, and those we anticipate will occur in the future. This is not easy, and becomes even more daunting in the context of funding availability. As a Department, we seek to be poised at the forefront of peer departments in developing and delivering teaching, research and extension programs that develop future leaders in the industry, and conduct research and extension programs that are adopted in appropriate and profitable ways. We recognize the value of providing “full-service” animal science programs. As other regional programs disappear or contract, this value increases exponentially. With our established high reputation in the animal sciences, we are well on our way to becoming “the” animal science program in the northeast. It is likely in the near future that there will exist just a handful of quality, full-service animal science programs; Penn State Dairy and Animal Science is poised to be one on these few.

## Strategic Issues

### *Research:*

- What strategic areas in research should be emphasized in the next five years?
- How do we enhance applied and basic research disciplines that will result in findings of commercial and societal value?
- There are important research areas/questions for which there is no federal competitive fund programs –do we sustain them, and, if so, how do we cash-flow them?

### *Undergraduate Program:*

- What strategic areas in teaching should be emphasized in the next 5 years? Is there a need to decrease the number of courses we offer?
- How do we sustain the quality of our undergraduate education programs?
- How do we increase the number of endowed scholarships? There are pressing needs for scholarships for students with an equine or companion animal interest.
- What investment of effort do we make in developing additional online courses?

### *Graduate Program:*

- Efforts continue to increase enrollment in our graduate program. As always, the question is, from where do the resources come?

### *Extension/Outreach:*

- What strategic areas in youth and adult extension should we focus on in the next five years?
- How do we fund and deliver educational programs that are not provided by private-sector companies, consultants and other universities to a diverse stakeholder population? In some instances, stakeholders do not have access to electronic resources or participate in college education.
- How do we better integrate our extension programs with those offered by other academic units in the College of Agricultural Sciences, and county-based educators?
- Departmental extension programs will need to become increasingly reliant on external funding and entrepreneurship by faculty and staff. What are the potential sources for these funds?
- How can we best utilize information technology to deliver extension and outreach education programs?

### *Information Technology:*

- How do we increase the efficiency and improve the quality of our IT program?

### *Communications and Marketing:*

- How do we grow our marketing efforts to enhance our departmental brand name, and recruit outstanding students into the undergraduate and graduate program?

### *Endowment Plan:*

- How does the Department grow our endowment; what are the areas of focus?

### *Staff Issues:*

- How does the Department provide and fund learning opportunities for self-enrichment and career advancement?

### *Facility Issues – DAS Farms and Henning Building:*

- Do we continue to operate all departmental farms (Beef/Sheep, Dairy, Deer, Equine, and Swine)?
- The present meats lab is outdated and needs to be replaced.
- Research at the dairy farm with lactating cows is constrained by number of animals available. To meet research needs, we need to increase the number of lactating cows from 220 to 500 cows. This expansion will require building a new dairy facility. The key questions at this juncture are: where do we locate the new facility and how do we pay for it?

- The growth of our equine science program has increased our needs for horses for teaching and research purposes. The current facilities are at capacity and not optimally suited to achieve these goals
- The Almquist Research Center is a key asset for our physiology research faculty, but needs to be modernized.

## Strategic Goals for Enhancement and Implementation of Strategies

### Research

#### *Background and Justification:*

Many technologies have been developed to increase animal production and productive efficiency and have reduced the impact of animal production on the environment. If animal agriculture is to thrive in the future in the U.S., it will do so because investments will have been made in fundamental discovery and applied research that lead to the development and application of new products/technologies that will drive down production costs, enhance productive efficiency and profitability, and solve other issues (i.e., animal health, animal welfare, food safety and quality, nutrient management, air quality and gas emissions) that confront animal production enterprises

#### **The Department of Dairy and Animal Science will focus on the following strategic research areas:**

1. Dairy nutrition
2. Fundamental reproductive biology
3. Enhanced efficiency, sustainability and profitability of animal-based agriculture to produce safer, more nutritious products
4. Equine science with emphasis on nutrition, reproductive physiology and athletic performance
5. Companion animal (dogs and cats) research

Historically, the Department has had a strong reproductive biology research program. In our last Strategic Plan we discussed that the number of faculty with expertise in reproductive

biology had decreased. This was one of the bases presented to the College for proposing the Reproductive Biology Initiative (now the Center for Reproductive Biology and Health). This vision is now reality with the hiring of seven faculty members; four in our Department (Drs. Liu, Oatley, Ott and Pate) and three faculty members in the Department of Poultry Science (Drs. Johnson, Diaz and Bartell). The Center has gotten off to a strong start building alliances across Penn State (both University Park and Hershey), as well as attracting research funding, graduate students and postdoctoral fellows. We propose to add another faculty position in the Center. In addition, we need to sustain our reputation in dairy nutrition by filling a position with focus in applied nutrition/management practices.

The second research priority will focus on enhancing production efficiency, sustainability, and profitability of animal-based agriculture to produce safer, more nutritious products. A significant portion of the research conducted in the Department is applied or translational research conducted at the interface of applied/basic science. Historically, the department has been recognized for this research that has led to important applications that have benefited animal agriculture. These benefits relate to: enhanced production, improved productive efficiency, improved product safety and quality, and reduced cost of production through feeding strategies, grazing and pasture use, management, and genetic selection. In addition, research in nutrient management and air quality issues has been, and will be a focus. It is evident that issues related to odor control, NH<sub>3</sub> and other gas emissions, nutrient management, and land use will have a significant impact on the sustainability of many animal enterprises. Consumers require safe food that meets specific quality standards, and failure to meet these standards for safety and quality will seriously impact profitability and consumer perceptions of the industries. Thus, it is important that these research questions continue to be addressed by the department to maintain relevance to the animal industries, to foster trust and enhance communication with the public, and contribute to the strength of animal agriculture- the largest economic component of Pennsylvania agriculture.

The third strategic research area is intended to increase our subject matter expertise in equine science, and do this in a manner that “harmonizes” with our reproductive physiology team and other faculty with expertise in pasture grazing systems. We have built our equine program substantively since 1998 and based, on student interest and industry support, there continues to be a need to grow this program.

We seek to build the companion animal (dogs and cats) research program in the areas of animal behavior and welfare, and nutrition. In 2008, Americans spent \$43.2 billion on their pets; of this, \$16.8 billion was spent on food, \$10 billion on “supplies” and over the counter medication, and \$12.2 billion on veterinary care. The Dairy and Animal Science Department has a history of teaching companion animal courses, and has grown this program to meet the needs and interests of our students. However, we have not actively pursued the research or funding possibilities of this industry. For these reasons, we propose to create a research program in companion animal welfare/behavior. Companion animal behavior and the effects of this on human-animal interactions are extremely important, and there is great interest in this research. The goal of the companion animal industry is to produce good quality animals that are behaviorally sound and physically healthy, and that will have a long, high quality life in their relationship with humans. In addition, increasing research has indicated the beneficial effects of the human animal bond on human health and well-being.

We appreciate that we have proposed a number of faculty positions to fill. Some of these reflect the reality that over the next five years a number of faculty likely will be retiring and appropriate subject matter expertise will be needed to fill these critical needs in our programs. In addition, for some proposed positions there are unique and important strategic opportunities to pursue.

### *Specific Strategic Goals – Faculty Hiring:*

**Goal 1 -** *Hire a faculty member with expertise in dairy nutrition.* This position will be research/teaching (60/40). We propose the individual filling this position conduct research in applied dairy management so that the research can easily be translated and utilized by the dairy industry. The research focus can be in any of the areas related to mastitis, dairy records management, cow comfort, behavior and facilities, nutrition, feed and resource management, and whole farm management. Teaching would be expected in dairy management, nutrition, health, and whole farm decision-making.



**Goal 2 -** *Hire two faculty members in dairy science extension/teaching.* One position is in reproductive management with teaching responsibilities in ANSC 310 and 410. The second position will be the Director of Dairy Alliance.

**Goal 3 -** *Hire a faculty member with expertise in companion animal welfare.*

Research possibilities: There are a number of research areas of interest in the behavior and human-animal interaction field. Basic research into the differences in human and animal cognition, behavioral problems and their prevention and treatments, and investigations into the interactions between canine handlers and their working companions are just a few of the possibilities for research in this field. The use of dogs, in particular, as models for human anxiety and other psychiatric conditions has gained in recognition. Organizations such as the Morris Animal Foundation, the Waltham Foundation, Maddie's fund, the American Kennel Club Canine Health Foundation and Pet industry companies have offered increasing funding to examine these questions.

Teaching responsibilities: There is very high student interest in learning about these issues. An Sc 215 (Pets in Society) currently addresses many of these questions and is taught both online and as a resident course. A new course in companion animal behavior is being developed to be offered in Spring 2010. Many students also have expressed interest in learning training and behavior techniques.

**Goal 4 -** *Hire two faculty members with expertise in equine science with teaching/research appointments.* We propose to hire an equine reproductive physiologist and an equine pasture/grazing systems scientist. The reproductive physiologist would complement the CRBH. The forage nutrition and management position is critical to the equine industry. A person with these strengths would bring a lot to complement many of the reproductive physiology faculty we have.

**Goal 5 -** *Hire a faculty member with expertise in the area of reproductive biology.* The Reproductive Biology Initiative has been a huge success. Outstanding young, midcareer and senior faculty have been assembled and developed an exciting team-oriented group. Elevation of the CRBH to elite status will be measured by securing of program project, center, and/or training grants from federal funding

agencies, most notably the USDA and NIH. Achieving this requires a critical mass of core members that are federally-funded. Therefore, it is believed that one additional faculty position in reproductive biology is needed. The ideal candidate for this position would be someone who will be highly competitive for NIH and USDA funding. A desirable research area would be one that complements existing expertise of the CRBH members including reproductive immunology, stem cell and germ cell biology, and gonadal function.

**Goal 6 -** *Hire a faculty member with expertise in meat science.* This position will be a research/teaching appointment. The research component will involve a meat microbiology focus, and extension/outreach programs appropriate for the meat industry in Pennsylvania and the region will be developed.

**Goal 7 -** *Hire a faculty member with expertise in beef cattle nutrition/reproductive biology.* This position will have a research/teaching split. The research component will be done in recognition of the farm facilities we have and the needs of the region.

**Goal 8 -** *Hire a faculty member with expertise in pet (canine) food nutrition with a teaching/research appointment.* Large pet food companies have sponsored much research in pet food nutrition. Much of this has been done “in-house”; however, they have increasingly looked to veterinary schools and universities to conduct this research.

Research possibilities- There are a number of research possibilities field. A reality is that we do not have a kennel of dogs for feeding trials. However, there are great opportunities for a scientist with interests in nutritional genomics or food science and technology. Given that we have a meats lab and our links to Food Science, the use of byproducts for food and treats is a potential area of research. We also have a favorable relationship with a large testing facility in the state that has been very open to tours and interactions with our students, and would be a great facility to conduct applied nutrition research.

Teaching responsibilities - An Sc 305 (Companion Animal Nutrition and Management) and An Sc 405 (Advanced Canine Nutrition and Management) are established core courses important to the major.

## Teaching/Advising

### *Background and Justification:*

The Department of Dairy and Animal Science has an outstanding record of undergraduate and graduate education programs. Moreover, we have a long-standing commitment to excellence in undergraduate and graduate student advising. Our department is at the forefront of advising undergraduate student clubs [Block & Bridle Club, Collegiate Horsemen at Penn State (CHAPS), Dairy Science Club, Students for Responsible use of Animals (SRUA), Penn State Collegiate Cattlewomen] some of which have achieved national prominence, and annually are regarded as among the best in the country. Moreover, there has been at least one DAS faculty member serving as an advisor to Ag Student Council for the past five years. In addition to DAS faculty and staff who are involved in club advising, we also field judging teams (Dairy, Horse and Livestock; we will be launching a Meats Judging team in the next year) and teams that compete in academic competitions (the Dairy Challenge Team, and the Beef Quiz Bowl Team). The teams our faculty and staff coach have a legacy of high success. Collectively, the amount of time devoted by faculty and staff to these activities is impressive, and underscores our commitment to providing a World-class educational opportunity. We will work to sustain this legacy.

### *Summary of Student Clubs Advised by Faculty and Staff*

#### *Block and Bridle Club*

Advisors – Vivian Baumer, Dan Kniffen, Ken Kephart

Members – About 140 active members from multiple majors.

Brief summary of activities and achievements – At the national convention in San Antonio, TX (Feb. 2009) the club was recognized as first in the nation for both Chapter Activities and Yearbook. In March 2009, for the second consecutive year, Penn State University presented the Block and Bridle Club with the Outstanding Student Organization award. In addition, the university presented the Block and Bridle Club with the Outstanding Executive Board award. Four of the major events the Club conducts annually include: 1) the Fall Club Calf Show and Sale; 2) assisting with the 4-H and Collegiate Livestock Judging contests at the Keystone International Livestock Exposition; 3) managing the Pennsylvania Beef Expo which includes preparing about 100 bulls for sale, holding a beef quiz bowl, a skillathon, a showmanship demonstration, and administering all aspects of the live show; 4) Little International during which students from across the university competitively prepare and exhibit animals. Fund raising includes two auctions, sale of yearbook ads, collecting and selling bovine blood to the Philadelphia Zoo for their vampire bat colony, and receiving donations for helping with various events throughout the year. Service activities include an annual “Beef Up the Blood Supply” blood drive (one of the largest on campus), sending donations to troops overseas, Heifer International and donating hams to during a local radio station’s “Twelve Days of Christmas” program designed to help needy families in Centre County.

### *Collegiate Horsemen's Association at Penn State (CHAPS)*

Advisor – Karen Vines

Members – About 35 active members from multiple majors.

Brief summary of activities and achievements – A highlight of CHAPS for the past year was hosting the American Collegiate Horsemen's Association (ACHA) of which they are an affiliate in Harrisburg in February. Activities included an evening at Penn National Race Track with a behind the scenes tour, visits to Iron Springs Farm, New Bolton Center, Hanover Shoe Farm and the Horse World Expo. Educational presentations were provided by leaders in the Pennsylvania Equine industry. Two members of the CHAPS were elected to national office during the delegates meeting. The club continues service through local animal support organizations and assistance with a local therapeutic riding program. The club also serves as one of the sponsoring organizations for the Equine Speaker Series, providing educational presentations for students and local residents.

### *Dairy Science Club*

Advisors – Dale Olver and Michael O'Connor

Members – About 80 active members from multiple majors.

Brief summary of activities and achievements – The Penn State Dairy Science Club is regarded as one of the nation's top organizations. For the past two years it has won the Outstanding Chapter award from the American Dairy Science Association--Student Affiliate Division (ADSA-SAD). In addition, Penn State's Dairy Science and Block and Bridle Clubs have joined forces at the Northeast ADSA-ASAS meetings to be named outstanding institution for the past four years. Major activities revolve around industry service, youth education, fundraising, and member development. The Nittany Lion Fall Classic provides members with experience in marketing and promotion, and it celebrated its 25th anniversary in 2008. Co-sponsored with the PA Holstein Association (PHA), this consignment sale offers members the opportunity to select, advertise, and sell over 70 head of high quality Holsteins. The annual holiday cheesebox sale is a major fundraising activity. Members take orders, prepare and package cheese, and make shipments to customers located in over 40 states. Proceeds from this sale and the Fall Classic are directed to the club's annual spring trip. Each year between 45-55 club members travel around the nation and world to visit outstanding dairy operations. Recent destinations have included Colorado, New Zealand, California, and Ireland.

### *Students for Responsible Use of Animals (SRUA)*

Advisor – Nancy Dreschel

Members – About 40 active members from multiple majors.

Brief summary of activities and achievements – A total of 40 students participate in Pet Therapy at nursing homes 2 to 3 times per month; Volunteer at T&D Cats of the World; and Volunteer at Centre County PAWS- bimonthly. This past fall, SRUA sponsored the Centre County PAWS Pet Extravaganza at the Ag Arena- where they volunteered, and ran a booth with student-created weight control information for pets. Throughout the year, guest speakers present information at meetings on issues in pet and wild animal welfare, as well as opportunities in the small animal industry. A spring trip is taken every year. Past trips have included visits to the Baltimore and Boston Aquariums, the Center for Comparative Medicine at Massachusetts General Hospital, the Smithsonian Zoo and the US Canine Enforcement and Training Center. Students raise money for trips through their annual holiday pet stocking sale, bake sales and running Canine Agility trials.

### *Penn State Collegiate Cattlewomen Club*

Advisor – Melissa Oatley

Members – 15 active members; newly formed (January, 2009)

Brief summary of activities and achievements – The first activity taken on by the group was third annual Meat-In Day to recognize the importance of meat in the diet. To prepare club members for talking to the public and addressing consumer issues, many of the members attended a media training provided by the PA Beef Ambassador Program. This prepared them for staffing a booth at Harvest to Home and Ag Awareness Days in Altoona.

## Specific Strategic Teaching Goals:

### *Undergraduate Program*

- Goal 1 -** *Sustain and continue to build the excellence of the Animal Sciences undergraduate program.* We have been very successful in increasing the number of Animal Sciences majors (see **Figure 1**). We propose to only incrementally increase enrollment. The Department of Poultry Science Strategic Plan proposed a 5% annual increase in student numbers. We believe that we should strive to keep growth to less than 5% per year. In addition, there is a pressing need to develop scholarships to defray educational costs for our students.
- Goal 2 -** *Begin planning an Entrance to the Major (ETM) requirement for the Animal Sciences major.* There is agreement that an ETM needs to be created for the major. The Animal Sciences Steering Committee will begin exploring an ETM requirement based on grades received in completed science courses. In addition, there is strong support for setting and enforcing a C-requirement for An Sc 201 for most of our 300 and 400 level An Sc courses. This will be a topic of discussion in the “near-term” for the Animal Sciences Steering Committee.
- Goal 3 -** *Evaluate options for offering some of our courses on-line.* Dr. Dreschel has developed and taught ANSC 215 (Pets in Society) online. We have an interest in developing additional online Animal Sciences courses, however, changes are needed in the interface and cost-sharing structure between the College e-learning program and World Campus before we embark on developing new online courses.
- Goal 4 -** *Conduct a survey (using web survey technology) of alumni of the Animal Sciences major.* The objective is to survey Animal Sciences alumni who graduated between 2001 and 2008 about their post baccalaureate careers and the effectiveness of the preparation they had while enrolled at Penn State, and to use this information when necessary to improve our current course offerings.

## **Graduate Program**

**Goal 1 -** *To increase funding for graduate student assistantships.* The recent faculty hires in the Department of Dairy and Animal Science have made great progress in attracting new graduate students. The expectation is that as their grant funding grows so too will the number of graduate students will increase. However, we need to identify other ways of increasing funding for assistantships (gifts, endowments) so that every faculty member with a 50% or greater research appointment has access to a stipend and tuition waiver. In addition, we need to increase funding levels for assistantships that are awarded to be competitive with our peer institutions.

**Goal 2 -** *Participate in the SARI (Scholarship and Research Integrity) program* by offering graduate students comprehensive, multilevel training in the responsible conduct of research, in a way that is tailored to address the issues faced by individual disciplines. All students entering graduate school after summer session 2009 are required to complete the SARI program, but the program will also be useful for students who entered the program earlier.

The program has two parts:

1. During the first year of enrollment, graduate students are required to complete an online RCR training program provided by the Collaborative Institutional Training Initiative (CITI), which is available through the SARI Resource Portal on the ORP (Office for Research Protections) website ([www.research.psu.edu/orp](http://www.research.psu.edu/orp)). Upon completion of the RCR program, each student will submit the Certificate of Completion to the Graduate Office in 312 Henning for recording.
2. Graduate students will also be required to engage in an additional five hours of discussion-based RCR education prior to degree completion. These discussions will encompass both universal and discipline-specific material. For Animal Science students, this material will be included in a required course, AN SC 502 (Scientific Scholarship). RCR topics to be discussed include Ethics in Science, Developing research ideas and formulating hypotheses, Acquisition, security, and reporting of data, Animal Welfare, and Authorship of publications.

## **Extension/Outreach**

### *Background and Justification:*

Animal agriculture in Pennsylvania is a large and important contributor to the economy of the Commonwealth. In 2007-2008, approximately 50% (or  $\approx$  \$2.9 billion) of the annual cash receipts for the sale of all agricultural commodities was derived from livestock and dairy product sales (*Pennsylvania Agricultural Statistics 2007-2008*). If the most recent revenue from the

horse industry is included (\$1.1 billion; from *2003 PA Equine Economic Impact Study*) then approximately 58% all cash receipts for agricultural commodities reflects livestock/dairy product sales, and revenue contributed by the equine industry. The scope of animal agriculture in the Commonwealth is impressive, and should be supported by effective extension programs that provide a variety of useful educational information that helps our many and diverse clientele groups maximize profitability and sustainability.

The dairy extension program, as other extension programs in the College, is comprised of county-based educators and faculty/staff with dairy extension responsibilities housed in multiple academic departments on the University Park campus, and across the Commonwealth. From a College perspective, an important goal is to have one integrated dairy extension program that operates effectively across the University Park campus and the counties. At the recent (April 8, 2009) Dairy In-Service, the Dairy Natural Working Group decided that Dairy Alliance be the “umbrella program” for College Dairy Extension Programs. Dairy Alliance delivers statewide programming in the areas of human resource management, nutrient management, information management, and workforce development to Pennsylvania’s dairy industry. Dairy Alliance also has developed collaborative working relationships with key partners in the state’s dairy industry, including the Pennsylvania Department of Agriculture, Lancaster Workforce Investment Board, Center for Dairy Excellence, Professional Dairy Managers of Pennsylvania, and the Pennsylvania Dairy Stakeholders, as well as numerous agri-business companies and several universities. In addition, since June 2004, the Dairy Alliance team has fulfilled a leadership role within Cooperative Extension by organizing and conducting an annual statewide dairy in-service for Extension educators. The first in-service led to the creation of the working teams responsible for development of the Pennsylvania Dairy Tool, an ongoing statewide program that is a collaborative effort of faculty, staff, and educators from Cooperative Extension and the departments of Agricultural and Biological Engineering, Agricultural Economics and Rural Sociology, Crop and Soil Sciences, Dairy and Animal Science, and Veterinary and Biomedical Sciences. Given all of this, Dairy Alliance is poised to further grow, and the Department of Dairy and Animal Science is committed to further building the excellence of Dairy Alliance.

There are many opportunities for the College and Department to further develop extension programs for the equine industry in the Commonwealth. Our State 4-H Horse Program is large (about 5,000 youth members) and widely recognized. We launched a program

fee of \$25 (per youth member) in 2008. Funds from this program were used to hire two 4-H equine extension associates (Bethany Bickel and Lew Trimble), to help defray operational expenses associated with their program activities, and to help create the 4-H Horse Program Endowment. The equine extension associates will help develop and maintain 4-H Horse Programs at the county and regional level. More specifically, they will assist county extension educators and volunteers with regional and multi-county 4-H horse events and activities, including current 4-H projects, the Safety and Horsemanship Skills Programs and a new recreational project to meet the needs of youth using horses for recreational purposes. Bethany and Lew are based in the Dauphin and Lawrence county extension offices. The reality, however, is that there is a pressing need to have an equine extension associate service each of the 10 horse districts in the Commonwealth. Additional fund development is needed to grow the 4-H Horse Program Endowment and further enhance youth programs of excellence.

Discussions and meetings have taken place “around” the idea of building Equine Alliance, an extension program designed to serve the Pennsylvania horse industry by providing education (both in the classroom and extension) and research findings. The evolution of this program will be dependent on our ability to procure funding to staff the program. We believe this should be pursued given the industry’s size and breadth in the Commonwealth. We envision Equine Alliance collaborating with diverse stakeholders in the horse industry to deliver educational programs to assure future acceptance and viability of the industry. Adult equine extension programming also will be done in a manner that “harmonizes” with the educational objectives of the College Equine Natural Working Group.

Historically, the Department has provided a variety of extension programs in swine, beef and meats extension. Public concerns associated with the pork industry began to intensify in Pennsylvania during the late 1990’s. The concerns have been associated with odor and related air pollutants, water quality, and the general regulation large-scale pork production. In response to these concerns, as well as educational needs within the industry, we have developed and implemented a number of programs. We will continue to build on these in the future. These programs include: site evaluation service, environmental certification, certification of manure haulers and brokers, and odors and emissions.

Pennsylvania has one of the largest number of small meat processors of all states in the country, many of which have participated in some type of extension education program during



the past five years. During that time, the regulatory aspects of food safety has been one of the top priority for meat processors. Other challenges confronting the meat industry in the Commonwealth include: hiring and retaining qualified employees, and keeping up with technological changes. There is a need for employee training at all levels. Coupled with the need to keep up with technological advances, the future of the meats extension program is in providing hands-on meat processing technology workshops and training programs for the new generation of meat processors in Pennsylvania.

Beef production is an important sector of Pennsylvania agriculture. The availability of low cost inputs allows the Commonwealth to remain competitive in the national beef production arena. The Beef Extension Program at Penn State University is a comprehensive program designed to develop programs that benefits beef producers in the Commonwealth, region and nationally.

The need for extension education programs in water quality, nutrient management, odor control, air pollutants, NH<sub>3</sub> emissions in the livestock industries, and Beef Quality Assurance programs continues to grow. The issue of agriculture and the environment has resulted in many public discussions relative to odor production, water quality, air quality, and perceived negative impacts on surrounding communities. The state leadership in Beef Quality Assurance has resulted in the adoption of the education materials as the “model” for the National Beef Quality Assurance Program. The Department is committed to continuing to be at the forefront in developing and delivering programs that target these areas.

#### *Specific Strategic Extension/Outreach Goals:*

**Goal 1 –** *Expand Dairy Alliance.* To sustain and grow the excellence of Dairy Alliance, our first objective is that we be given permission to fill the vacant Director position. A second objective which is being shaped by the Dairy Alliance team is the development of six Statewide Dairy Program Areas (see Figure 4). Each is co-chaired by University Park and county educators. The team is committed to aggressively seeking external funding sources for personnel and program support.

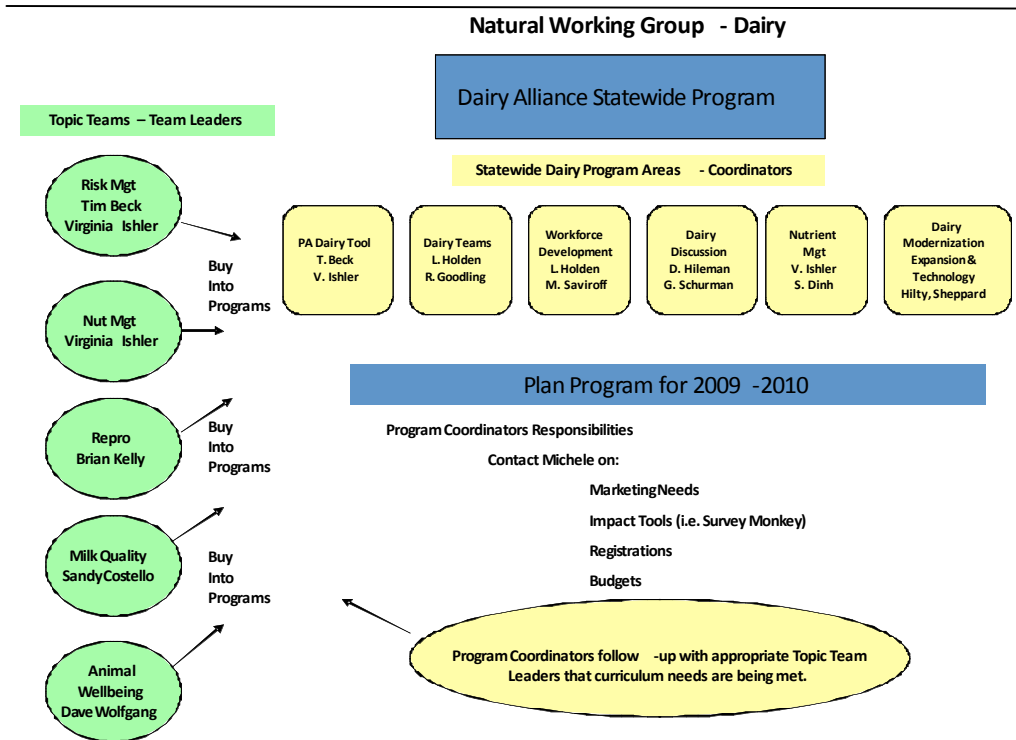


Figure 4.

**Goal 2-**

*Expand our equine extension programs.* Areas of emphasis will be to increase the number of equine extension associates that develop and deliver programs for our 4-H Horse Program at the county level. We seek to fill two positions that are similar to those that we created in the past year. Funding will have to be realized from sources other than increasing the program fee. We seek to develop Equine Alliance. Our long-term goal is to secure funding for an Equine Industry Relations Liaison position and hire two equine extension associates. The expertise sought for the extension associate positions is: equine production and management; business/information management. Funding for these positions and programmatic support will be sought from the industry and industry organizations. Members of Equine Alliance will collaborate with the College Equine Natural Group. The focus of the latter group is on conducting programs in environmental stewardship with a focus on nutrient management, water quality, air quality, and pasture management.

**Goal 3 -** *Water Quality and Quantity.* We will continue to oversee a training and certification program for commercial manure haulers relative to sound methods for transportation and application of manure (in conjunction with state regulations for Act 38 and Act 49). Participants must demonstrate competencies in the calculation of application rates, setbacks from sensitive areas, and accident prevention and response.

We will continue to offer a certification program for on-farm environmental stewardship to producers who participate in a 3<sup>rd</sup> party environmental assessment of their farm and demonstrate implementation of nutrient management and conservation practices.

Producers who propose new Concentrated Animal Operations must comply with nutrient management regulations under Act 38. We offer a site evaluation program is available to producers to help identify the potential for odor conflict, an important component of which includes a variety of concerns associated with the application of manure.

We will continue to offer other extension programs that impact water quality and quantity. These include precision feeding, anaerobic digester, and manure management. For dairy, we are focusing on training nutritionists to be certified so they can write feed management plans. We are focusing on improving forage quality to minimize bringing nutrients onto the farm.

**Goal 4 -** *To sustain and grow our livestock and meat science extension programs,* four areas have been identified by the Livestock Natural Working Group.

1. Livestock Marketing - identify opportunity areas and develop educational materials that enable producers to capitalize on more profitable ways to market livestock.
2. Quality Assurance - develop and deliver educational programs for meat animal producers; supply them with the tools and methods necessary to market livestock that will yield wholesome and safe meat.
3. Offal and Mortality Disposal - develop and deliver programs for livestock producers and processors to dispose of inedible animal residuals with an emphasis on environmental protection and public health.

4. Livestock Efficiencies - deliver programs to livestock producers interested in finding their idea production scheme to maximize profitability.

### **Information Technology**

The Dairy and Animal Science Web presence plays an increasingly critical role in the department's mission of teaching, research, and outreach. Due to the leveraging of open-source and Web 2.0 technologies, along with collaboration with open-source communities and service organizations at Penn State, the infrastructure is in place to expand -- and greatly enhance the efficiency of -- the following online efforts:

- \* information delivery
- \* teaching-and-learning
- \* collaboration and community building

While the requirement for World Campus to serve as the conduit for online, for-credit courses makes it impossible to deliver such courses through our Web presence, we do have the opportunity to deliver noncredit, self-paced tutorials, streaming and recorded seminars, and other learning materials for producers, consultants, extension educators, 4-H youth, and the public. We will continue to add to our growing collection of streaming and recorded seminars as well as to develop online learning materials for a variety of audiences. We are also in a position to expand our extensive library of online research and extension publications and to offer an array of alternate media for these materials.

To date, the Department has replaced about 70 percent of its Web tools with open-source technologies; it will reach its goal of 90 percent within the next several months. We will continue to identify open-source and Web 2.0 technologies as well as partnership opportunities -- with the aim of providing the department with an ever-expanding array of online tools and services that will enhance our Web presence and continue to increase cost-effectiveness. These technologies also will serve our faculty, staff, and clientele in many areas - online collaboration, media sharing, student recruitment, and online community building, to name a few.

## Communications and Marketing

The Department will be proactive in disseminating timely and comprehensive information to its diverse stakeholders, including producers, industry leaders and the general public.

Building upon our website, which has experienced exceptional usage (*the Dairy and Animal Science Web presence is consistently the highest ranking site in the College of Agricultural Sciences in terms of usage, receiving 556,038 page views from May 5, 2008 - May 5, 2009*), the Department will use current information technology, including Facebook, Twitter and Flickr, and continue its use of podcasts and webcams.

We will continue to encourage faculty and staff to share news of importance about programs, people and events so that the website can be as current as possible. An effort will be made to encourage faculty and staff to think proactively in developing feature stories about their students, their research and their continuing programs.

## Endowment Plan

The University has launched *For the Future: The Campaign for Penn State Students*, a development campaign with goals to ensure that educational opportunities remain accessible and that our students have a world-class educational experience. The Department *For the Future Campaign Goals* are:

### *Ensuring Student Opportunity and Enhancing Honors Education*

Students with the ability and ambition to attend the University will have this opportunity through scholarship. Students of exceptional ability will experience the best honors education in the nation.

- Undergraduate Support – endowed and annual support will be sought in the form of undergraduate scholarships and undergraduate awards.
- Graduate Support – endowed support for graduate students will be sought in the form of graduate fellowships, graduate assistantships, graduate scholarships, and graduate awards.

Goal = \$1,000,000

### *Building Faculty Strength and Capacity*

Students will study with the finest teachers and researchers; endowed chairs and professorships will be sought.

Goal = \$5,000,000

### *Building Departmental Program Capacity*

Students, faculty and staff will benefit from support for ongoing and new extension, research and teaching programs. Endowments that support programs within the department, including farm operations, will be sought.

Goal = \$2,000,000

We propose to create a Development Committee comprised of approximately 6 to 8 friends and supporters of the Department. This group would help identify donor prospects and work with the Department to grow our endowment. A second strategy we are going to pursue in *For the Future Campaign* is to establish a small, select group of undergraduate students that would assist with ongoing Development efforts. This would include having these students going on *select* visits with prospective donors. We propose that this cohort of student volunteers attend a training session(s) presented by the staff in the College of Agricultural Sciences Development Office.

## **Departmental Facilities and Operations**

### *Farms*

The availability of our farms and animals (see the Appendix for the location of our farms) is absolutely essential to support the different teaching, research and extension programs we conduct. We are one of a shrinking few “full-service” animal science programs. As other animal science programs contract or disappear, the value of our program increases exponentially. We are uniquely positioned in the northeast to be “the” animal science program. Managing this array of farms, however, creates a challenge for the Department that is unlike that for the vast majority of other academic departments at University Park. One of the important questions confronting us is: *Will the existing farms stay at their present locations, or will they move?* In addition, we

believe it is important to determine how each farm will be operated to meet our projected needs for teaching, research and extension programs.

An additional complexity we confront with respect the location of our farms pertains to decisions made at the University level about land use issues. Recently, we just became aware of the Office of the Physical Plan (OPP) Master Plan Recommendations for land use (see: <http://www.opp.psu.edu/planning-construction/master-plans/university-park-campus-master-plan/university-park-campus-master-plan-1/5.0-master-plan-recommendations>). This plan contains a section (5.1.4 - Renew and Relocate the Dairy and Swine Centers) that conveys what is presented in our plan (see below). In addition, there is a section (5.1.6 Consolidate Equine, Beef and Sheep Programs North of Park Avenue) that discusses “possibilities” for the future sites of these farms. The latter options have not discussed with the Department in a substantive way.

There have been extensive discussions in the Department over the past 10 years about strategic objectives for our farms and programs they support. Our conclusions are:

- To meet growing research needs, we need to increase the number of lactating cows from 220 (current number) to 500 lactating cows. To do this will necessitate building a new dairy farm (see below).
- The Meats Lab needs to be replaced.
- Present horse barn facilities need to be expanded, and this should be done at a new location.
- Utilization of the Deer Pens could be increased.
- The Swine Center needs to be relocated.
- The labs on the third floor of the Henning Building need to be remodeled.
- The Almquist Research Center (used for animal physiology research) needs to be renovated.

### *Strategy for the Dairy Farm:*

The status of the Dairy Farm is a key strategic matter for our department. There are growing pressures to relocate the Dairy Farm. These include the inability to expand operations at the present site; the outdated condition of some of the existing facilities; and the desire to establish more compatible long-term land use in a less congested area while retaining close proximity of the farm to campus.

A 500 head (lactating cows) herd is the goal for the new Dairy Farm. The site should be close to campus, ideally within five to seven miles. The site would be a reasonably contiguous block with a minimum contiguous core parcel of 300 to 400 acres. The land would be used for

forage production, nutrient recycling and pasture, in addition to accommodating the Dairy Complex.

#### *Strategy for the Meats Lab:*

The present Meats Lab is outdated. This was discussed in our last Strategic Plan. There have been reoccurring problems for years with the refrigeration system. Given the importance of adequate refrigeration (and freezers) systems, there is a strong need to build a new facility. Construction of this facility is presented as a goal in the 2008-2013 College Strategic Plan. We strongly endorse this, and favor building the facility in close proximity to the Snider Ag Arena.

#### *Strategy for the Horse Farm:*

The growth of our equine program has pushed the current facilities to capacity. A major goal is to build a new facility (60 stall stable) with sufficient run-out lots, and pastures with large sheds for research, teaching and extension programs. Ideally this should be adjacent to an indoor arena for teaching and demonstration purposes. In addition, there is a need to build a larger arena (heated with seating) that could be used by clientele groups in the region. The pressing issues are funding and where to site the facility.

#### *Strategy for the Deer Pens:*

Our deer facility is positioned to support research and teaching in areas related to wild deer population control and disease monitoring and address the research needs of the growing captive deer industry. Most university-operated facilities are located in states that do not farm deer, or are managed by natural resource departments that are not interested in working with an alternative agriculture industry.

In the deer farming industry, there is a desire for research and education programs on a broad range of topics including disease, nutrition and reproduction. Funding is beginning to become available for research on captive deer. The 2008 Farm Bill includes language that directs \$25 million to be spent on captive deer research over the next five years. State and national deer farming associations also are beginning to have research money available.

Pharmaceutical companies are beginning to consider testing vaccines for use in farmed deer. In addition to tours for the general public, the facility is utilized by a number of animal science,



wildlife and veterinary classes and various summer camps. The facility is uniquely positioned to provide public education on the proper management of wild deer populations and reducing deer/human conflicts in suburban and agriculture settings. Additional educational workshops or seminars could be offered for deer farmers in the future.

*Strategy for the Swine Farm:*

The challenges confronting the question of where to relocate the Swine Farm are the same as for our other farm units – funding and location.

*Strategy for Remodeling Third Floor of Henning Building:*

The laboratory facilities in W.L. Henning Building are outdated and need to be remodeled. This is proposed in the College Strategic Plan. We enthusiastically support this proposal.

*Strategy for Remodeling the Almquist Research Center:*

The Almquist Research Center has a long and “storied” history of making landmark contributions to the field of reproductive physiology. The development and growth (in terms of faculty number and research funding) of the Center for Reproductive Biology and Health necessitates that we find funding to renovate the laboratory facilities in the Almquist Research Center. This is necessary to provide additional contemporary research laboratories for the Center. In addition, starting in Fall, 2009 we will begin teaching biotechnology laboratory class at the facility. The class would be much better served by access to modern research laboratory facilities.

## Appendix A: Organizations that Interact with the Department of Dairy and Animal Science

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American Association of Meat Processors  
American Quarter Horse Association  
American Youth Horse Council  
Cattlemen's Beef Board  
Center for Beef Excellence  
Center for Dairy Excellence  
Continental Dorset Club  
Dairy Records Management System (DRMS)  
Eastern Meat Packers  
Genex Cooperative  
Federation of Animal Science Societies (FASS)  
National Cattlemen's Beef Association  
National Pork Board Swine Educators  
Keystone International Livestock Exposition (KILE)  
North American Deer Farmers Association  
Penn Ag Industries  
Penn State Agricultural Council  
Penn State Stockmen's Club  
Penn State Dairymen's Club  
Pennsylvania Association of Conservation Districts  
Pennsylvania Association of Meat Processors  
Pennsylvania Angus Association  
Pennsylvania Beef Council  
Pennsylvania Cattlemen's Association  
Pennsylvania Council of Cooperative Extension Associations  
Pennsylvania Council on Therapeutic Horsemanship  
Pennsylvania Deer Farmers Association  
Pennsylvania Dairymen's Association  
Pennsylvania Dairy Stakeholders  
Pennsylvania Department of Agriculture  
Pennsylvania Department of Agriculture Livestock Evaluation Center  
Pennsylvania Dorset Breeders Association  
Pennsylvania Equine Council  
Pennsylvania Equine Council Foundation  
Pennsylvania Environmental Council  
Pennsylvania Farm Bureau  
Pennsylvania Farm Show  
Pennsylvania Farriers Association  
Pennsylvania 4H Horse Program Development Committee  
Pennsylvania Hereford Association  
Pennsylvania Holstein Association  
Pennsylvania Horse Breeders Association  
Pennsylvania Livestock Association  
Pennsylvania Manure Haulers/Applicators Council  
Pennsylvania Meat Goat Producers Association  
Pennsylvania Milk Marketing Board  
Pennsylvania Quarter Horse Association  
Pennsylvania Pork Producers Council  
Pennsylvania Sheep and Wool Growers  
Pennsylvania Swine Council  
Professional Dairy Managers of Pennsylvania (PDMP)  
Quality Deer Management Association  
Select Sire Power, Inc.