

## Update from Animal Science Teaching Section

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#### Summary and Implications

The career market for animal science graduates is excellent, though farm-gate prices and the Iowa economy have been less than ideal. The economic situation in Iowa has had a significant impact on enrollment in animal science, but little change has been reflected in total job availability due to the diversity of educational paths for animal science students. Placement rate is exceptionally high and average starting salary for animal science graduates continues to increase.

The composition of the animal science undergraduate population has changed dramatically over the past 20 years. Currently, approximately 70 percent of the students are women and 48 percent of students did not grow up on a farm or ranch. The department has responded to the differing backgrounds and experiences of this diverse student population. New courses have been added and some existing courses have been restructured to meet changing needs and interests. The ultimate goal is to bring all students to a comparable level of knowledge for job entry and career success.

#### Introduction

As reported in the 2000 Swine Report, enrollment trend in animal science and dairy science undergraduate programs had been on a steady increase from 1986 to 1999. Farm gate prices began to have a significant negative impact on undergraduate enrollment in 1999. In particular, fall 1998 hog prices and more recent trends in dairy prices have taken a toll on freshman enrollment. Concurrently, Iowa State University (ISU) increased tuition at up to double-digit figures in an attempt to fill the gap created by reduction in state funding and to come closer to rates charged by the "land-grant 11" university comparison group. Impacted by these stresses, there has been a trend for more students to remain closer to home and attend community college for their first 2 years of higher education.

#### Enrollment History and Trends

Table 1 contains selected enrollment statistics for fall semester 2002, but this is only a snapshot of the happenings when both historic and current trends are considered. Although ISU has experienced continued growth, setting enrollment records in each of the past two years, the College of Agriculture has experienced a small, but significant reduction in enrollment in recent years.

**Table 1. Fall 2002 Enrollment at Iowa State University.**

Animal Science majors	507
Dairy Science majors	50
General preveterinary students*	57
<b>Total, department</b>	<b>614</b>
Total, College of Agriculture	2,624
Total, Iowa State University	27,898

\* Majors in animal or dairy science may declare preveterinary medicine options, but the department also manages the undeclared preveterinary medicine program (general preveterinary medicine) for the university.

In 1986, impacted by the existing agricultural commodity price crisis, the department hit a modern low for enrollment numbers at 360 undergraduate majors. By 1998, enrollment had rebounded to an all-time high of 731 undergraduates (more than 750 with double majors added). What caused this unprecedented growth of approximately 10% per year for 10 years? Enrollment of women and urban students increased dramatically.

**Table 2. Changing population: increasing enrollment of women from 1989 to 2002.\***

Major:	Men:		Women:	
	1989	2002	1989	2002
AnS/DyS	190	150	79	276
AnSPV/DySPV	109	26	111	105
GenPV	0	14	0	40
<b>Total:</b>	<b>299</b>	<b>187</b>	<b>190</b>	<b>427</b>

\*Source: Office of the Registrar, Iowa State University. AnS, animal science; DyS, dairy science; PV, preveterinary medicine; GenPV, undeclared preveterinary medicine

#### The Animal Science Student of the 21<sup>st</sup> century

Over the period 1986 to 1998, the numbers of men enrolled in animal and dairy science remained relatively steady. These men were primarily farm or ranch background students, commonly referred to in those years as "traditional" students. The dramatic enrollment increase was attributed primarily to two rapidly growing clientele groups: 1) women from both rural and urban backgrounds interested in animal science and preveterinary medicine, and 2) men from urban backgrounds who began to replace a significant percentage of rural background men. The 2000 to 2002 downward trend in total animal science enrollment is due in large part to agricultural price stresses. The losses in enrollment were disproportionately from the farm and ranch based student population, both men and women.

What prompted the dramatic increase in the two new populations of students? Job markets continued to open more fully to women, and this message filtered throughout the educational system. Television shows such as *All Creatures Great and Small* continued to popularize the roll of the veterinarian to students, especially urban students with interest in pet animals.

A change in species interest in the student population was concurrent with the enrollment increase. The percentage of students with primary interest in horses or companion animals rose dramatically.

The following tables, created from survey information of students enrolled in freshman animal science (AnS 114) at Iowa State University over the past two decades, illustrate some of the dramatic changes in the animal science student of the 21<sup>st</sup> century.

**Table 3. AnS114 changing population: student background.**

Grew up on/in:	1981	2002
Farm/ranch, %	76	52
Acreage/small town, %	7	10
Metro area, %	17	38

**Table 4. AnS114 changing population: student experience with farm situations.**

Experience level:	1981	2002
None, %	5	13
Limited general farm experience, %	13	23
Experienced, crop farm only, %	10	5
Experienced, one species, %	39	25
Experienced, multi-species, %	33	34

**Table 5. AnS 114 changing population: student employment goals.**

Employment goal:	1981	2002
Home farm, %	25*	12*
Another farm, %	24	10
Allied ag industry, %	28	14
Veterinarian, %	3	49

\*Column totals do not add to 100% due to additional choice categories with minimal selection in survey.

**Placement**

The career market for animal science and dairy science graduates continued to be exceptional, even with the recent challenges created by the economy. Placement rate for academic year 2001 for department graduates was 98%. Estimates of average 2002 starting salaries also showed continued growth. Animal and dairy Science graduates averaged approximately \$33,000 first year salaries, and students completing veterinary medicine averaged approximately \$49,000.

**Table 6. Fiscal year 2001 employment: selected general results for animal science and dairy science students.**

	Number:
Graduates	129
Placed	127
Placed in agriculture	77
Further education*	39
Agriculture placements within Iowa	50
Estimated average salary	\$33,000

\* "Further education" included graduate studies (MBA, M.S., Ph.D.); colleges of law, medicine, and veterinary medicine; or a second bachelor's program.

Primary job placement areas for graduates can be categorized by the following excerpt from Animal Science 311, a career development course:

- 1. Animal production and general agribusiness.** Careers include livestock, horse, kennel manager or animal rescue unit manager - all areas of direct work with animals. Starting salaries range from \$25,000 to \$37,000. Additional benefits may include housing, utilities, vehicle, and meat or milk allowance.
- 2. Agricultural sales and marketing.** Careers include animal health salesperson; nutrition consultant; livestock product specialist; urban pet food distributor; animal, feed, equipment, or semen marketer. Starting salaries range from \$28,000 to \$45,000. Additional benefits may include provision of a car, cell phone, and expense account.
- 3. Agricultural business and finance.** Careers include agricultural loan officer, small business management trainee, purchasing or merchandising agent for commodities. Starting salaries range from \$28,000 to \$35,000.
- 4. Animal promotion and information.** Careers include feature article writer, advertising development specialist, or marketer for major agricultural journals; animal breed association representative for sales development, export, and member services; USDA livestock reporting services; DHIA supervisor. Starting salaries range from \$27,000 to \$32,000. Additional benefits may include expense account and provision of a car and cell phone.
- 5. Meat science and dairy foods.** Careers include APHIS quality insurance; pet food research or manufacturing quality control officer; livestock buyer for meat processor; meat or dairy processing quality control supervisor; new foods development technician; and foods processing facility management trainee. Starting salaries range from \$28,000 (government) to \$45,000.

**6. Veterinary medicine.** Entrance into the veterinary medicine professional program is by a competition and selection process after completion of preveterinary courses and requires four years additional professional education. Careers after completion of the professional program include private practice in small, large, or combined animal clinic; state and federal government inspection services; military food procurement and quality assurance; industry research and technical services. Starting salaries averaged \$49,000 for 2002.

**7. Advanced degree.** Entrance is by a competition and selection process. Career market is determined by degree. **Master of Science (M.S.)** degrees are generally 3-year programs of coursework and research. Many variations of these programs exist. Careers include research associate in industry, university, or government laboratory; nutrition or breeding consultants; extension specialists; and community college instructors. Starting salaries range from \$35,000 to \$50,000. **Doctor of Philosophy (Ph.D.)** degree generally follows successful completion of M.S. degree, but remains on competitive enrollment basis. Period of study ranges from 2 to 4 years after completion of an MS. Careers include: research, extension, and/or teaching at a university; industry research project leader; and USDA research. Starting salaries range from \$55,000 to \$70,000.

**8. International agriculture.** International agriculture is generally combined with one of the previously described areas. Careers include government representative on international projects, international sales or market

development, and Peace Corps. Salaries are dependent upon degree attained and expertise.

## Discussion

Over the past 20 years, enrollment in animal science has ridden a wave of change, both in numbers and in background and goals of students. The vision statement for the Department of Animal Science includes these words relative to teaching: *"We, the faculty, staff, and students, aspire to be the premier source of ...professionally trained individuals in animal science and biology... We will achieve this vision through interactive learning,...and client-focused engagement with students..."*. The new student clientele may have been termed "non-traditional" in 1982, but in 2002, they are a critical component of our present and future. The vision of the faculty and staff in the department includes both the traditional mission to serve students with rural and livestock backgrounds and our new market: the urban student with minimal exposure to livestock. By following an "outcomes based" curriculum, the faculty and staff can bring both groups of students to the same endpoint in education.

To find out more about opportunities in the animal science or dairy science curricula, the preveterinary medicine program, the Department of Animal Science, or ISU, begin by visiting these Web sites:

<http://www.ans.iastate.edu/>

<http://www.public.iastate.edu/~ans/dairy/home.html>