

FY 2006 HSI Grantees' Conference

## **Human Capital Issues Facing Agriculture**

Presentation by  
Jeffrey Gilmore, Ph.D.  
Director, Higher Education Programs - USDA  
September 5, 2006  
Washington, DC

### **The Big Picture – Policy Issues**

- **Global Economy; Few Students or Professionals are Prepared; Youngsters not Studying Science**
- **Increasing Need for Advanced Knowledge Workforce; Student K-12 Performance Declining**
- **New Technologies (GMF) and Emerging Issues (Trade Subsidies, Bio-Terrorism)**
- **Decreasing Farm Acreage; Kids don't know about Farms; Increasing World Population**
- **State Funding Cuts for Higher Education**
- **Fewer Students Have Connection to Farms or Rural Issues; Ag Students not racially, ethnically diverse**
- **Half of Ag Jobs Filled by Non-Ag Majors**
- **Retirement of Baby Boom Generation (and USDA Labor Force) in Next 10-20 Years; Need to Replace Vast Numbers of Scientists and other Professionals**

## More Big Picture Policy Issues

- **Increasing Minority Population – Low Educational Attainment, Underserved, Stigma Against Agriculture**
- **Agriculture Education Slow to Follow National Demographic Changes**
- **High Rate of Ph.D. Non-Completion plus Large Numbers of Foreign Nationals.**
- **5-Year Time Lag between Workforce Requirements and Curriculum Development**
- **20-Year Time Lag between Workforce Human Capital Needs and Prepared Graduates**
- **Agriculture Not Viewed as Science-Based**

## Critical Workforce Issues

- Job Openings vs. Graduates Equal Overall, but Over/Under Supply in Certain Fields
- Need More Agriculture Managers & Marketing Professionals, Fewer Production and Social Science Professionals
- Agriculture Scientists & Engineers Holding Their Own, but 20% of Jobs Filled by Non-Ag Majors
- Student Enrollments/Degrees Holding Steady, But Not Matching Employment Needs in Various Fields
- Retirement of Scientists – Where Will We Get the Replacements?
- Agriculture Education Slow to Follow National Demographic Changes
- Demand for Managers & Marketing Professionals – Students Not Enrolling
- High Rate of Ph.D. Non-Completion plus Large Numbers of Foreign Nationals

**Q. Why Are Things this Way?**  
**A. Possibly due to Market Factors**

- Consumers Preferences
- Evolving Business Structures
- Technological Developments
- Public Policy Choices

## **Critical Farm and Rural Issues**

### **Recent Trends in the Structure of Agriculture:**

- Farm consolidation
- Larger farms
- Decline in farm numbers
- Specialization in production
- Less Labor Needed
- Movement from general farms to very specialized farm types

## Consequences

- Loss of farm population (out migration)
- Rural neighborhoods vacant during the day, owing to larger numbers of part-time farms
- Aging of farm population
  - Fewer opportunities for beginning farmers
  - Technology enables farmers to continue farming longer
- Increase in rural nonfarm residences and land speculators and investors

## Trends in Post 1980s Farm Crisis

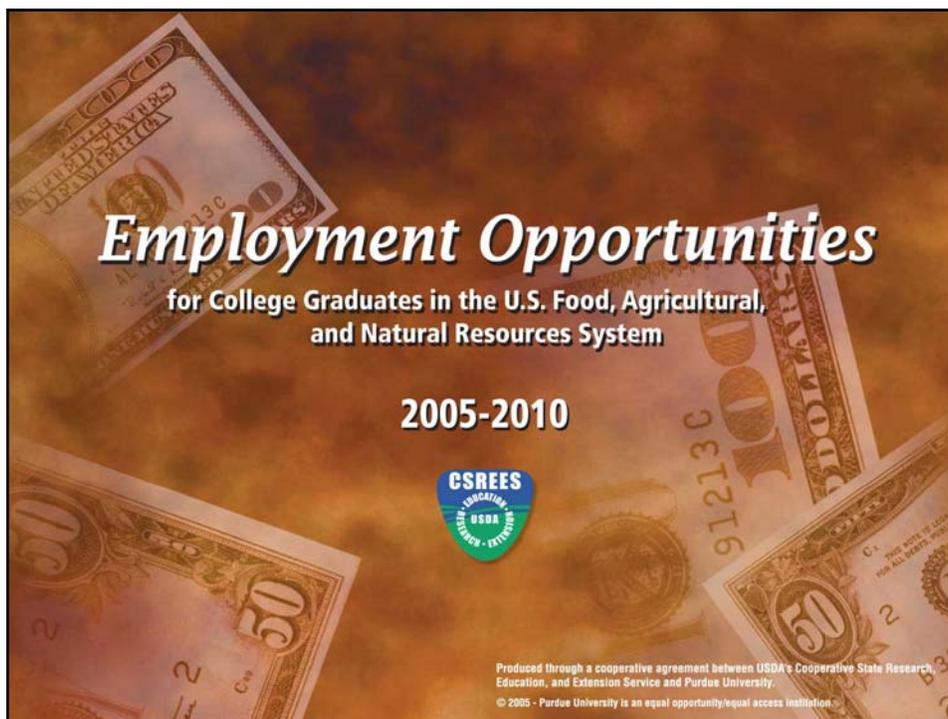
- Quite similar to the post-Depression years of the 1930s
- Many farm families are tired of economic hardship and are encouraging their children to look elsewhere
- Young people that are selecting careers in 2000s are the products of the 1980s farm crisis. They grew up in a climate characterized by tough economic times and pessimism

## Business Succession

- Raises questions about what can or should be done to create opportunities for the next generation
- Highly mobile, energetic, well-educated young people will migrate to areas where there are better opportunities
- Hence, it is critical that we think in terms of creating opportunities for future farm families

## Changing Demographics

- Increasing Minority Populations (from 20% in 1972 to 40% in 2000, with Hispanics Now in Greater Proportion than African Americans)
- Minority Graduate Enrollment Up From 8% in 1976 to 26% (Biggest Gains in Asian)
- Women in the Majority of Those Pursuing Higher Education (from 40% in 1970, to 50% in 1980, to 60% – At Both Graduate & Undergraduate Levels)



## Supply/Demand Details

- **52,000 - Job Opportunities (per year)**
- **49,300 - Available Graduates (per year)**

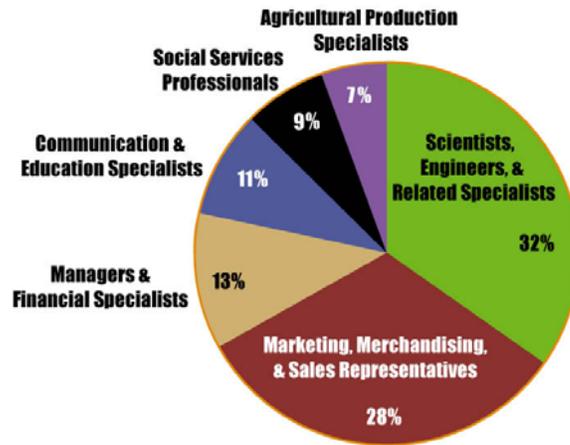
---

- **32,300 - Agriculture and Life Sciences**
- **17,000 - Allied Fields of Study**

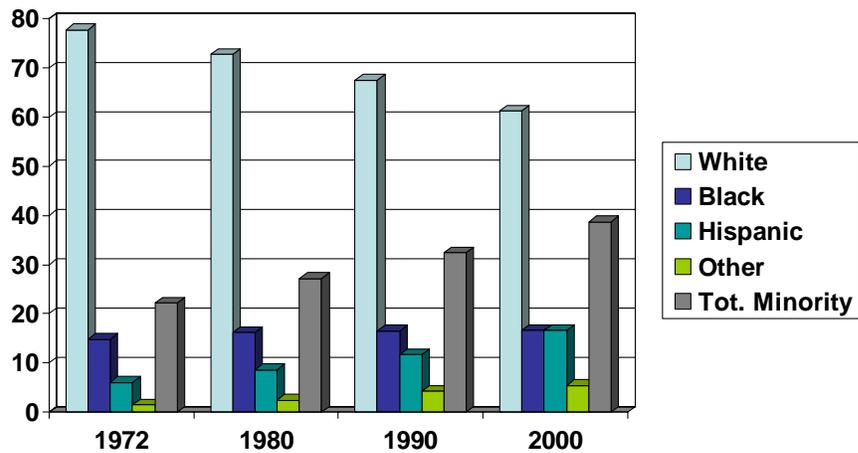
---

- **25% - Scientific/Engineering (13,000/year)**
- **16% - Agriculture/Forestry Production (8,000/year)**
- **46% - Management/Business (24,000/year)**
- **13% - Education, Communication, and Governmental Services (7,000/year)**

## Where the Jobs Are



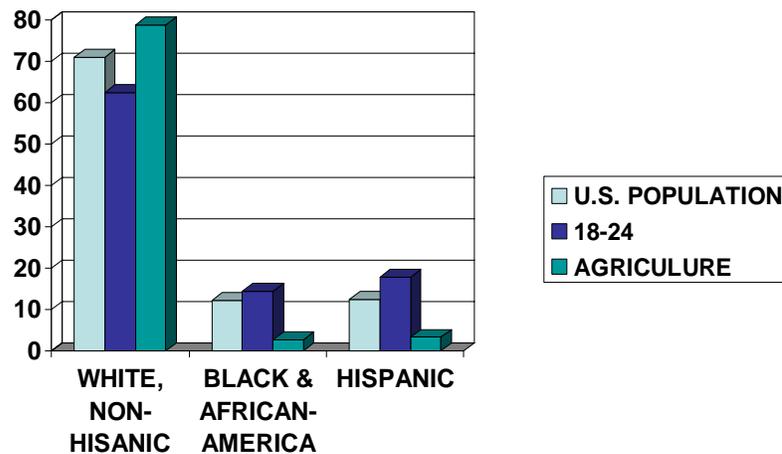
## Percentage Racial/Ethnic Distribution of Public School Students, Grades K-12



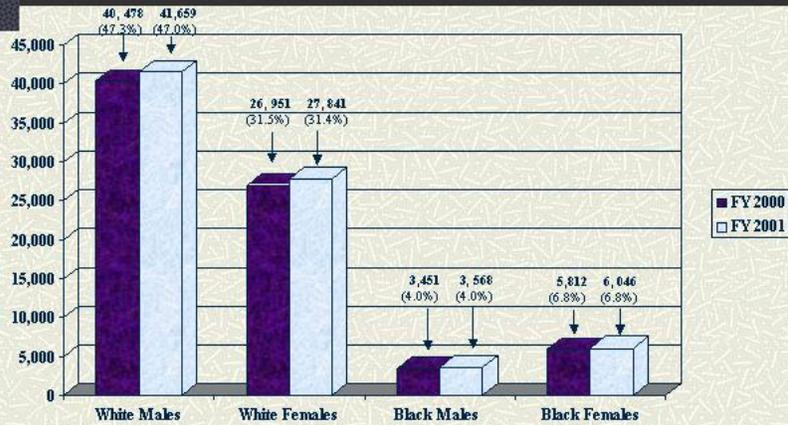
## Agriculture Does Not Look Like Rest of USA

- Minorities in Ag at 20% (vs. 30% in Total U.S. population, 40% ages 18-24, 40% in K-12)
- Doctorate Women at 40% (up from 30% in 1990), but not equal to USA 60% all undergraduate fields and 56% in all graduate
- Undergraduate Enrollment Up 35% in Past Decade (vs. 10% Increase for All Fields)

### MINORITY STUDENTS IN AGRICULTURE



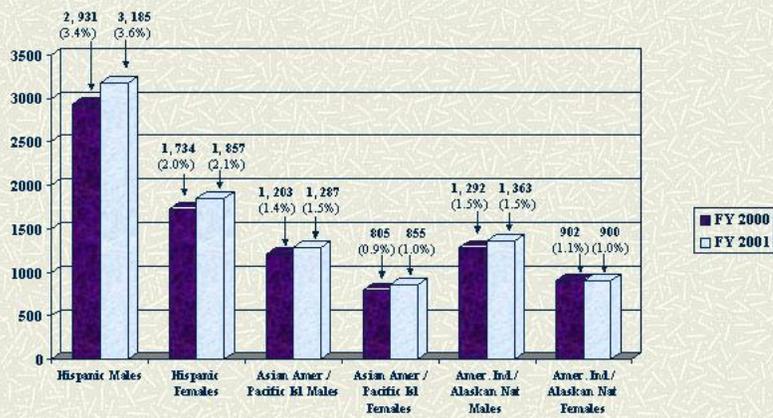
## USDA-WIDE WORK FORCE PROFILES FOR FISCAL YEARS 2000 AND 2001



FY 2000 Total Permanent Workforce = 85,597. Total Minorities = 18,130 (21.2%)  
 FY 2001 Total Permanent Workforce = 88,594. Total Minorities = 19,061 (21.52%)

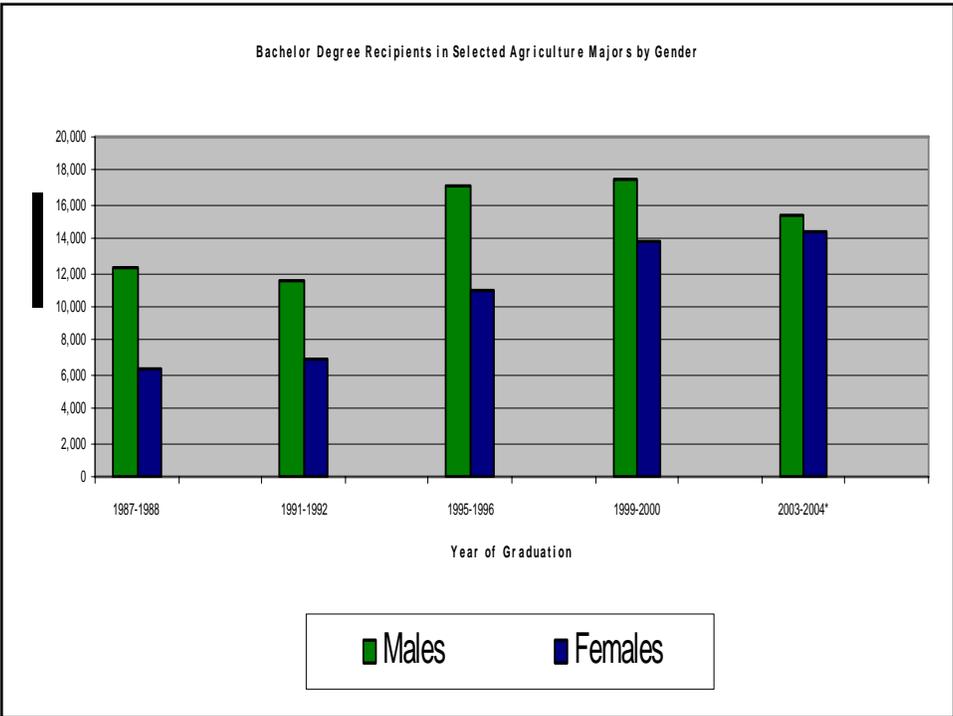
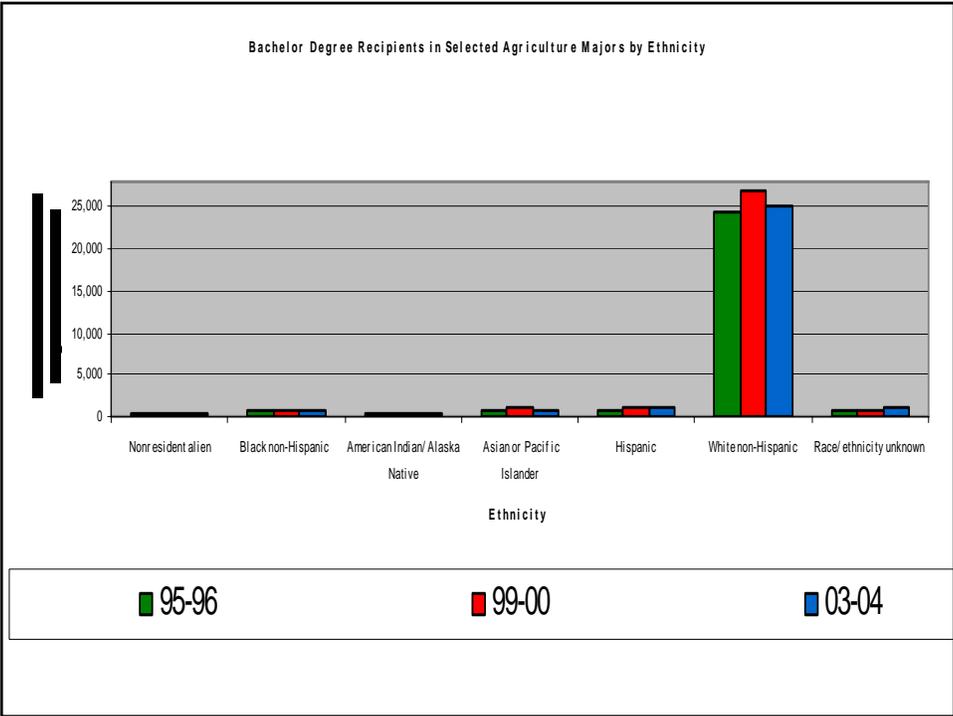
Data Source: NFC Reporting Center/Permanent Workforce

## USDA-WIDE WORK FORCE PROFILES FOR FISCAL YEARS 2000 AND 2001



FY 2000 Total Permanent Workforce = 85,597. Total Minorities = 18,130 (21.2%)  
 FY 2001 Total Permanent Workforce = 88,594. Total Minorities = 19,061 (21.52%)

Data Source: NFC Reporting Center/Permanent Workforce



## New and Upcoming Fields

Are We Educating Our Students for These?

- Genomics and Bioinformatics
- Food Quality and Nutraceuticals
- Environmental Quality
- Food System Security
- Land and Water Use
- Consumer Information
- Forest Ecosystem Management
- Specialty Crops
- Green Spaces
- Sales and Technical Services
- Product Value Enhancement
- Business Management

## MINORITY-SERVING INSTITUTIONS and USDA

Despite gains in minority-serving institutions and programs encouraging diversity in higher education and the workforce, USDA faces challenges to promote human capital development by helping all citizens realize their educational potential.