

One Health, Occupational Health and the Upper Midwest Agriculture Safety and Health Center (UMASH)

Bruce H. Alexander, PhD

Overview

- NIOSH Ag Centers
- UMASH
- One Health and Occupational Health
- UMASH Center Projects

NIOSH Centers for Agricultural Disease and Injury Research, Education, and Prevention

December 2011



1. University of Nebraska Medical Center, Omaha
2. University of Iowa, Iowa City
3. Colorado State University, Ft. Collins
4. National Farm Medicine Center, Marshfield, WI
5. Bassett Healthcare, Cooperstown, NY

6. University of Kentucky, Lexington
7. University of Washington, Seattle
8. University of Texas Health Science Center, Tyler
9. University of Minnesota, Minneapolis
10. University of California, Davis

Mission of NIOSH Ag Centers

- To minimize burden of occupational disease and injury to agriculture workers and their families.
- Research
- Prevention
- Education
- Communication

Why the focus on Agriculture?

The Agricultural Work Environment

- Complex work environment
- Physical hazards
 - Animals
 - Machinery/tools/structures
- Bioaerosols
- Physical agents
- Agricultural chemicals

Injury and Illness in Agriculture Workers

- Fatal and non-fatal traumatic injury
- Musculoskeletal disorders
- Respiratory diseases
- Skin diseases
- Hearing loss
- Neurological disease
- Zoonoses

Agriculture in the Upper Midwest

- ~315,000 operations in MN, WI, ND, SD
- Leading producers
 - Pork
 - Dairy
 - Turkey
 - Soybean, corn, oil seed
 - Potatoes, wheat

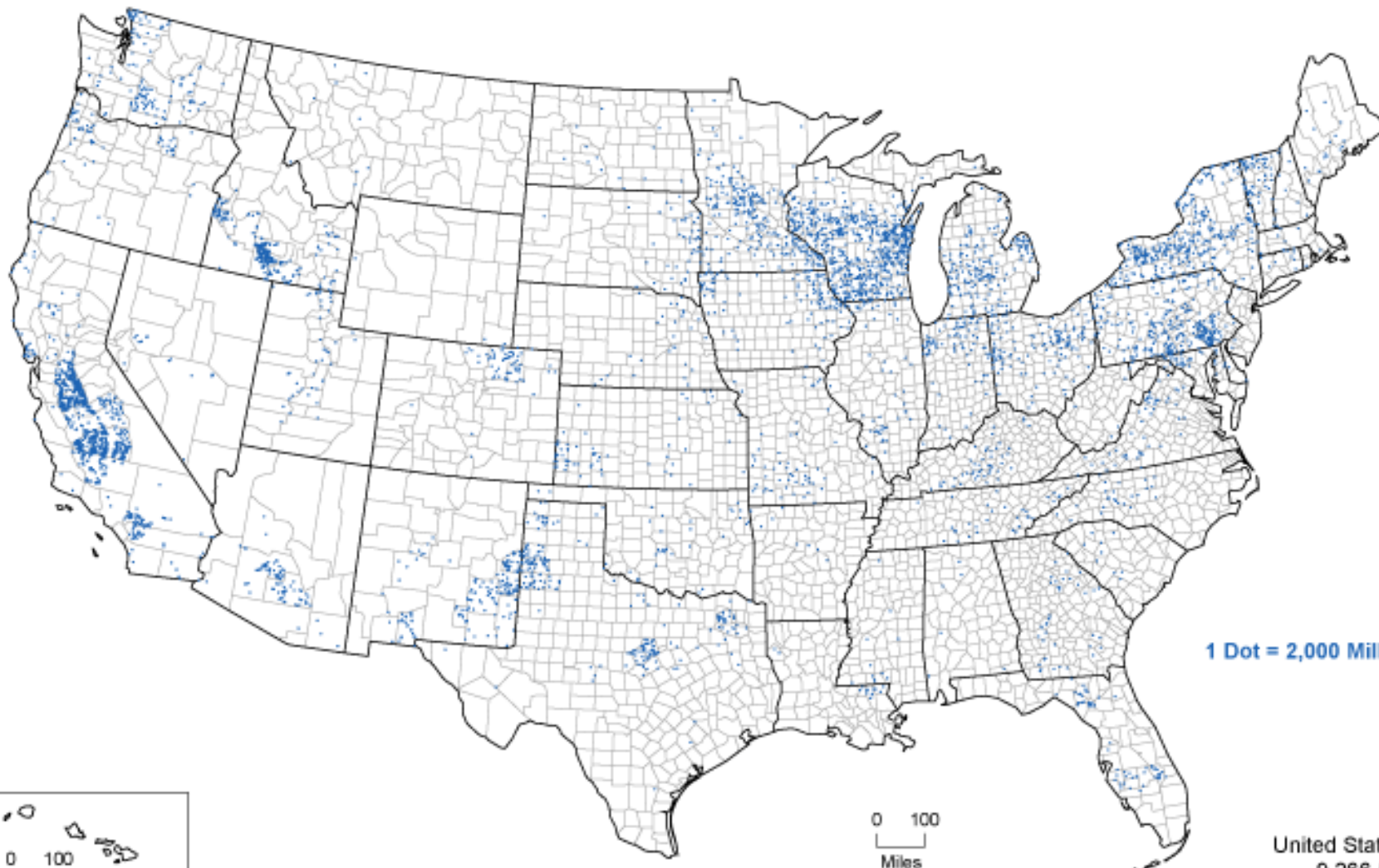
Agricultural Practices are Changing



0 200
Miles

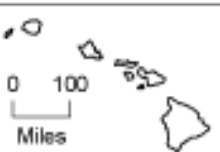


Milk Cows - Inventory: 2007



1 Dot = 2,000 Milk Cows

0 100
Miles



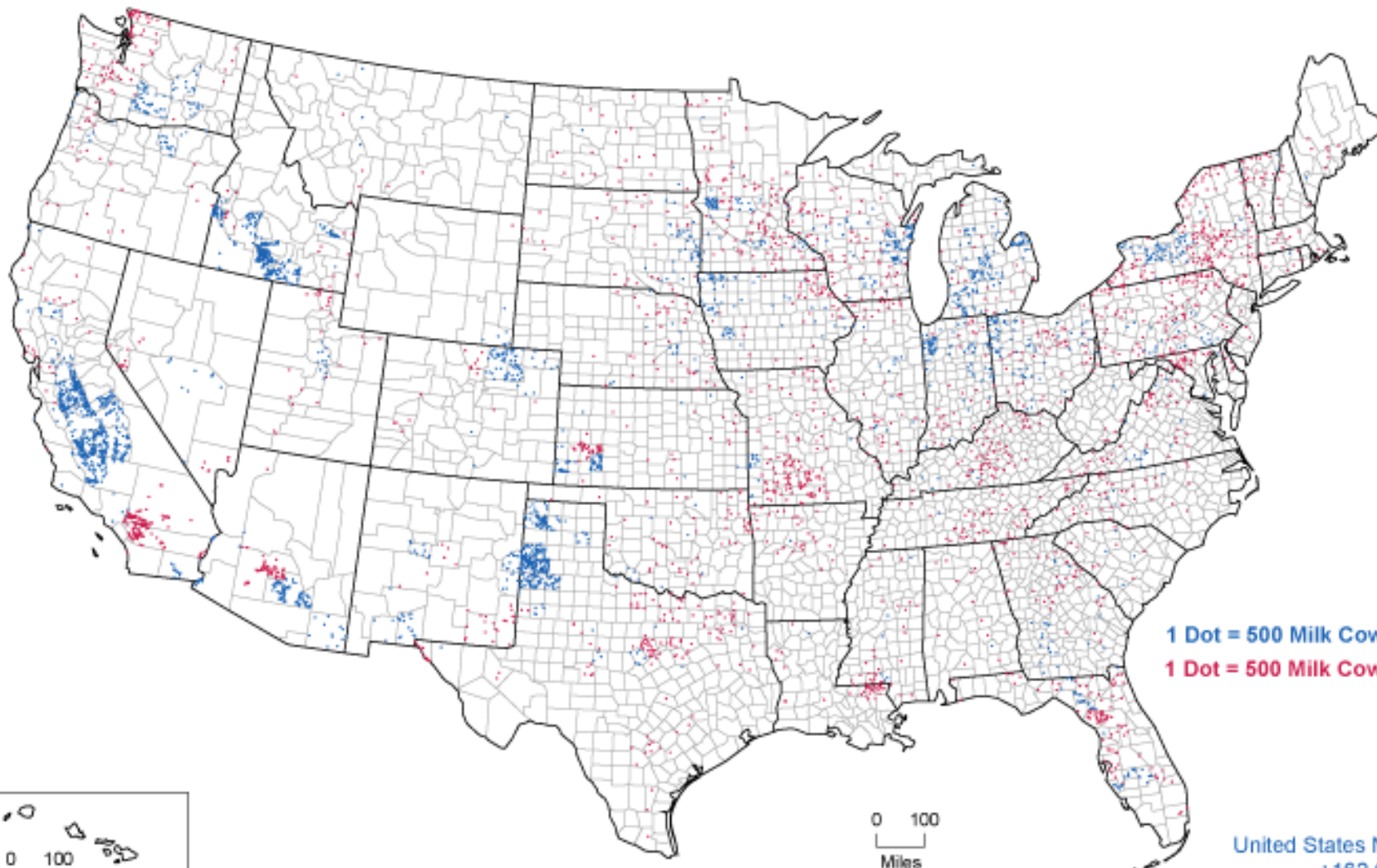
0 100
Miles

United States Total
9,266,574

0 200
Miles



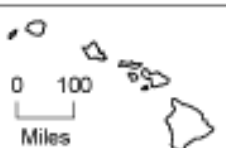
Milk Cows - Change in Inventory: 2002 to 2007



1 Dot = 500 Milk Cows Increase

1 Dot = 500 Milk Cows Decrease

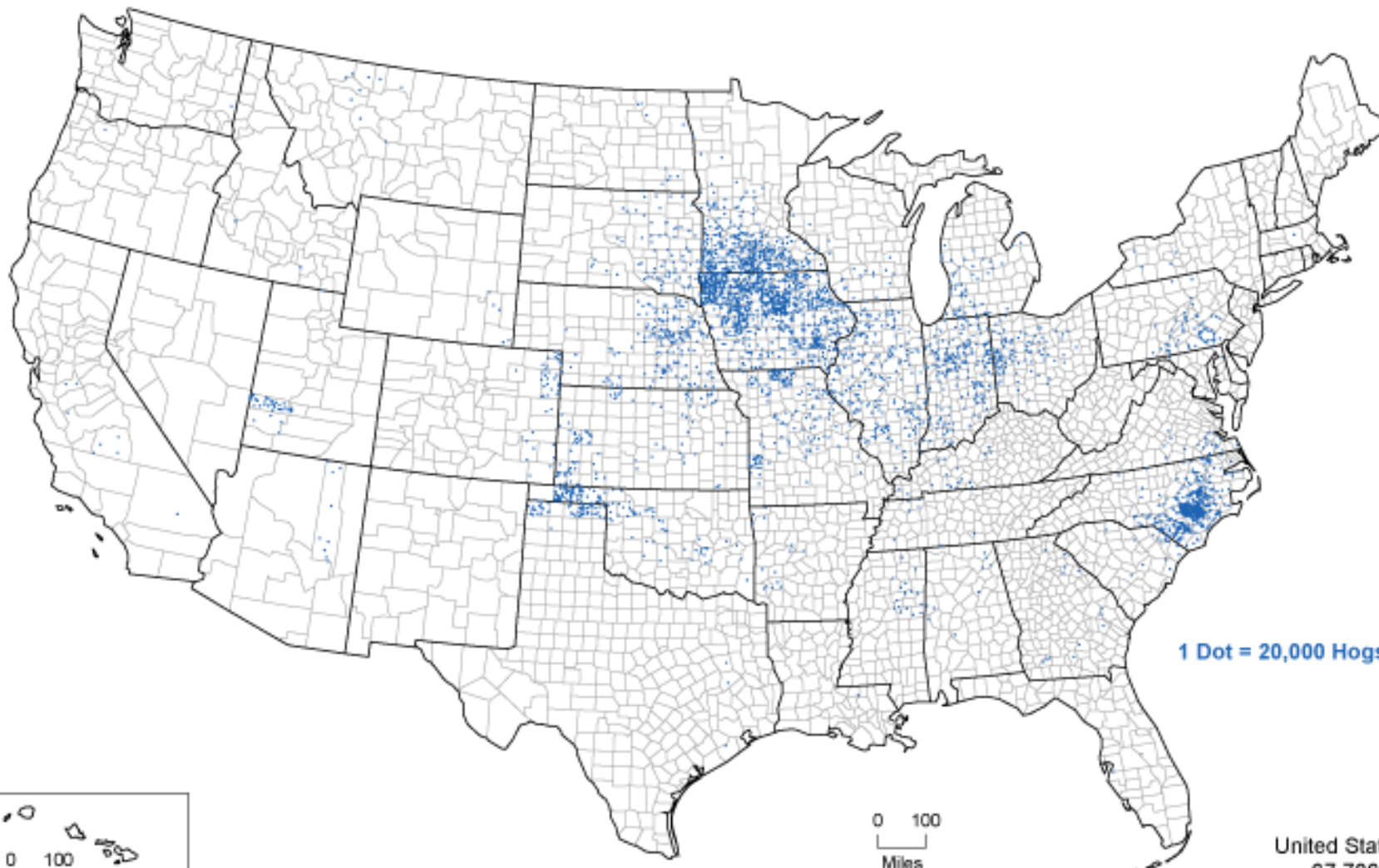
United States Net Increase
+162,615



0 200
Miles

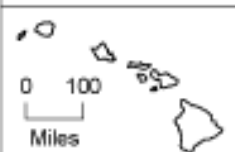


Hogs and Pigs - Inventory: 2007



1 Dot = 20,000 Hogs and Pigs

0 100
Miles

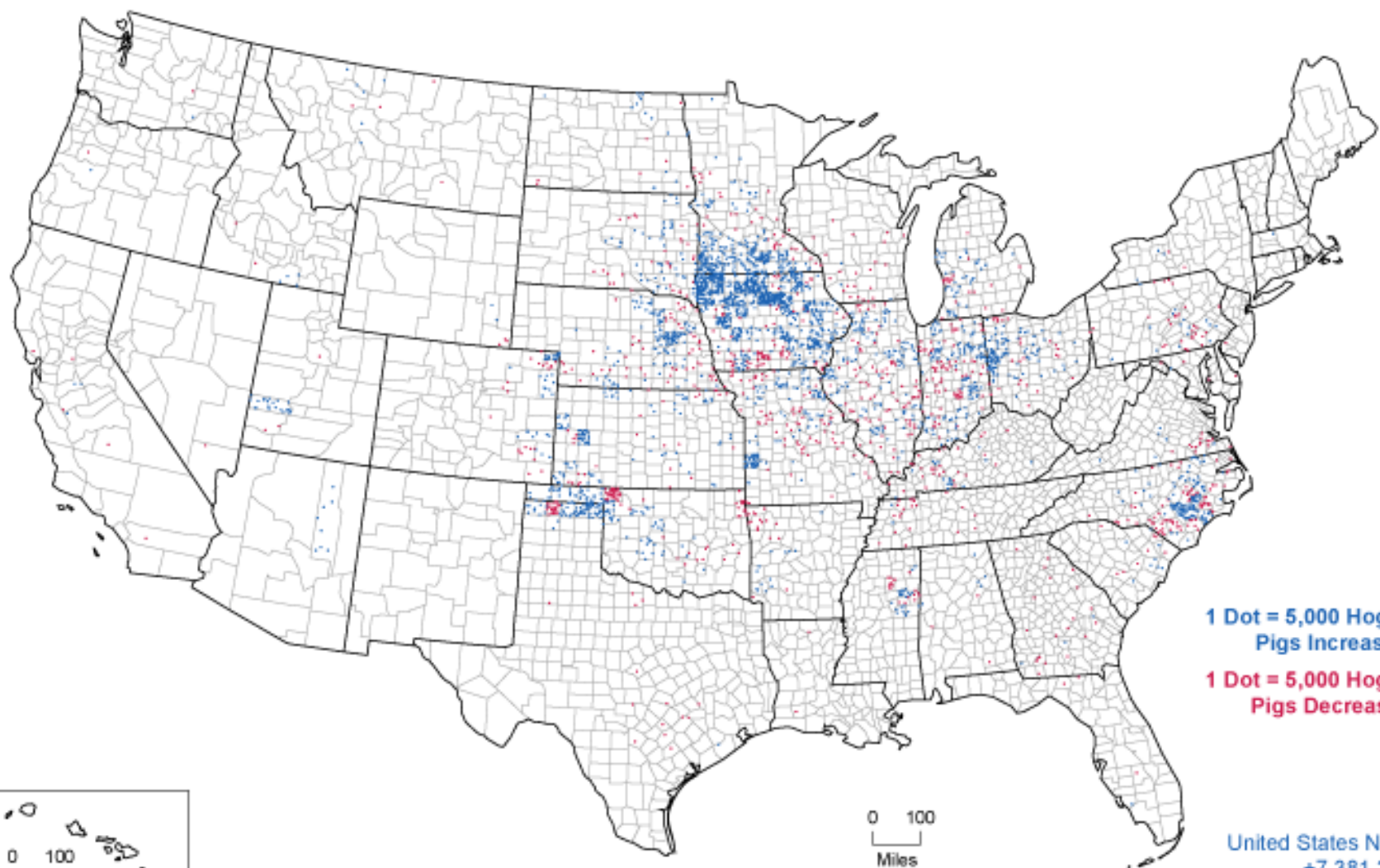


0 100
Miles

United States Total
67,786,318

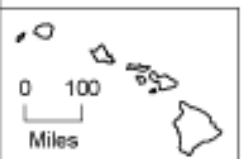


Hogs and Pigs - Change in Inventory: 2002 to 2007



1 Dot = 5,000 Hogs and Pigs Increase
1 Dot = 5,000 Hogs and Pigs Decrease

**United States Net Increase
+7,381,215**



What do changes mean for workforce?

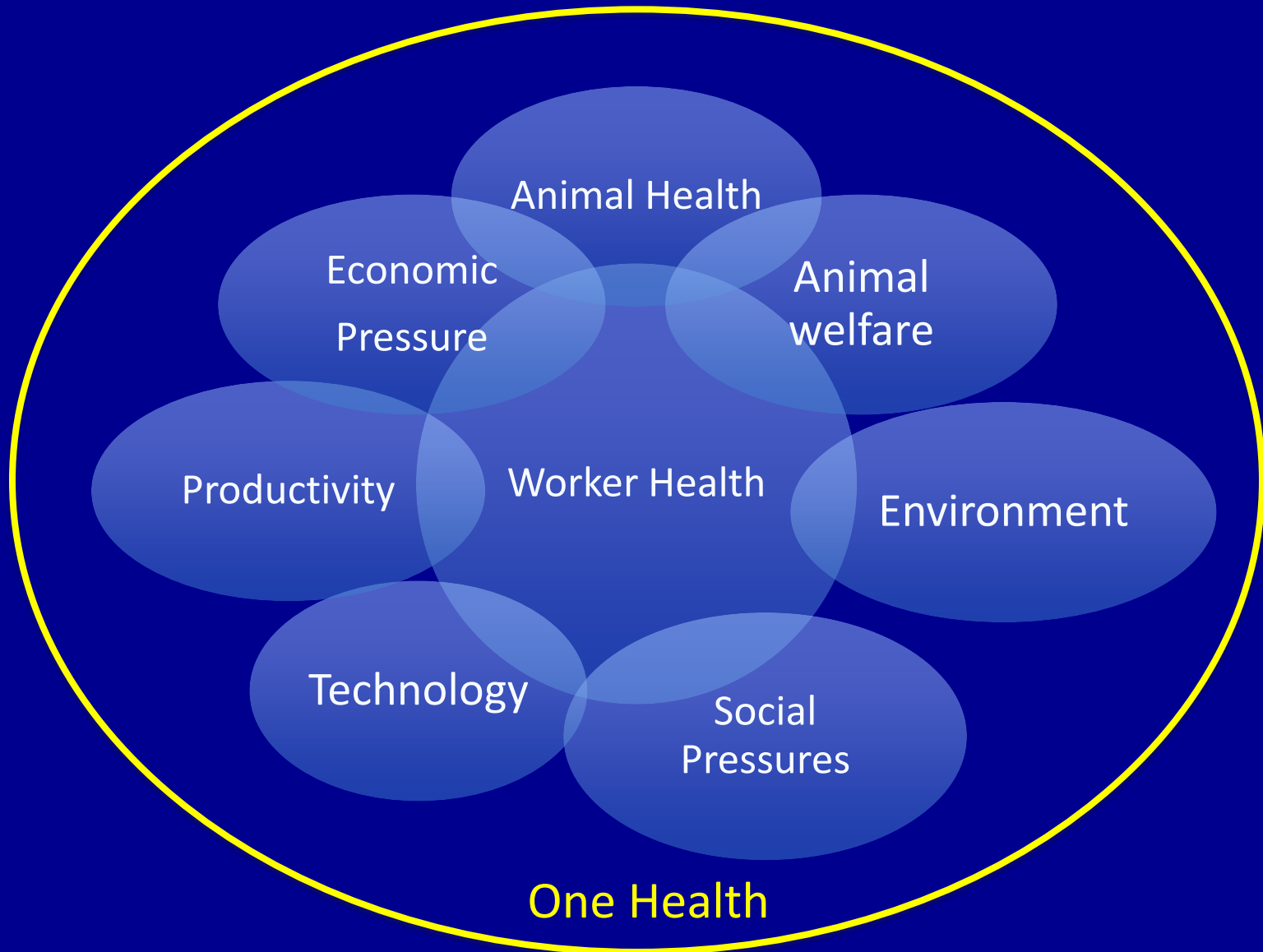
- More hired labor
 - Different management structures
- Intensification of activities
- Changes in technology/methods

- Recent changes to 'local' and 'sustainable' agriculture
 - New populations at risk

One Health

The One Health concept is a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment

One Health in Ag Health and Safety



U pper M idwest A griculture S afety and H ealth Center

- University of Minnesota
 - School of Public Health
 - College of Veterinary Medicine
- Minnesota Department of Health
- Marshfield Clinic
 - National Farm Medicine Center

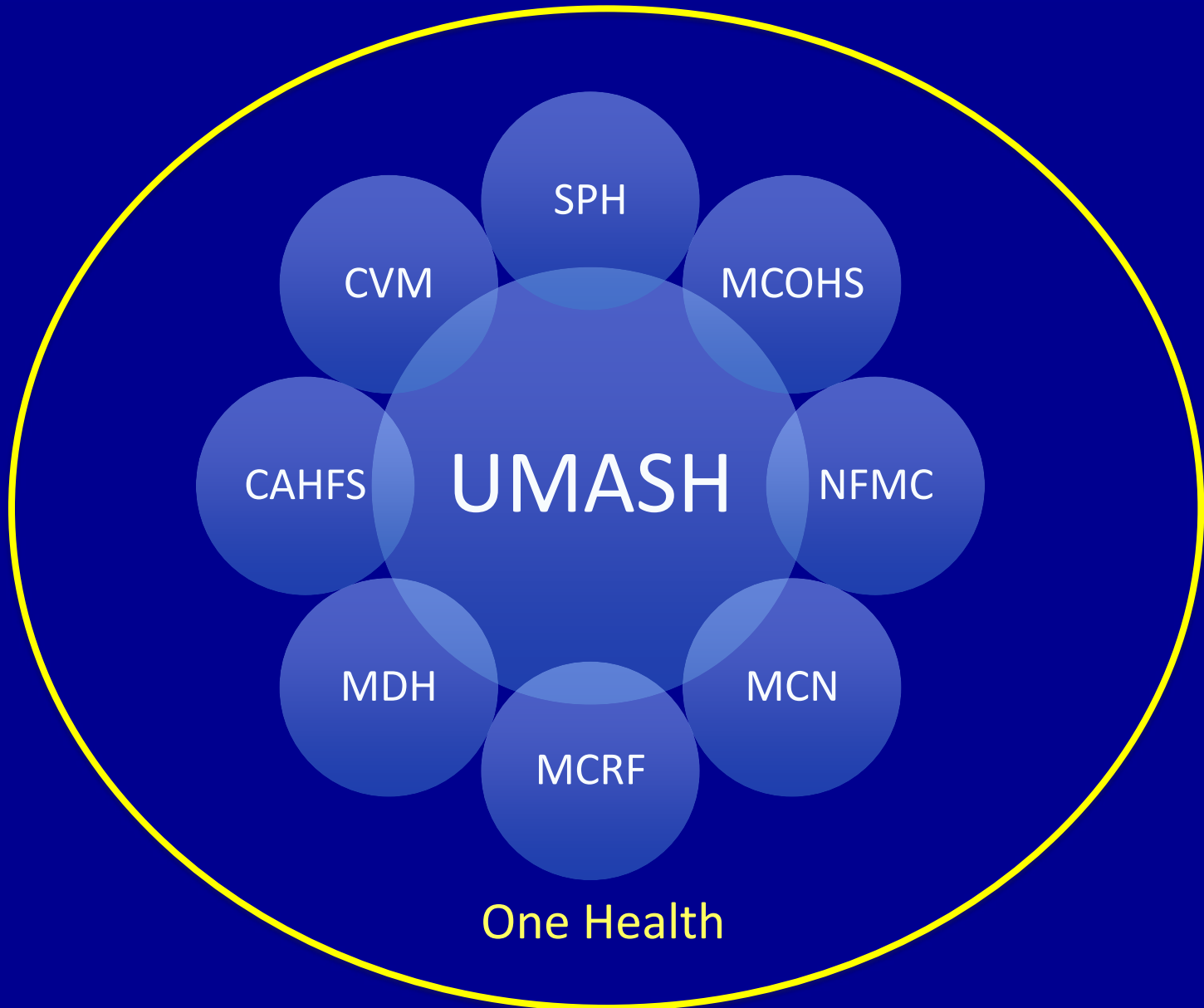
UMASH Goals

- Reduce burden of disease and injury in agriculture workers and families in Upper Midwest
- Identify emerging issues
- Multidisciplinary approach
- Connect agriculture, public health, and health care

UMASH Areas of Focus

- Animal agriculture (for now)
- Changes in agricultural
 - Economics
 - Societal pressures
 - Demographics
 - Technology
- Adopt One Health approach

UMASH: A unique collaboration for an Ag Center



Center Projects

(Thumbnails)

Occupational Hazards in Pork Production Associated With Production Practices

- Bruce Alexander, PhD, PI
- Jeff Bender, DVM, MS
- Peter Raynor, PhD
- Gurumurthy Ramachandran, PhD

Occupational Hazards in Pork Production Associated With Production Practices

- Do practices with varying types of animal confinement affect worker health?
- Risk of injury
 - Human animal interactions
 - Working space
- Respirable dust, biogases, endotoxin
 - Ventilation, waste handling
 - Season

MRSA Colonization and Infection in Swine Veterinarians

Peter Davies, BVsc, PhD, PI

Claudia Munoz-Zanzi, DVM, MPVM, PhD

Srinand Sreevasthan, DVM, MVSc, MPH, PhD

MRSA Colonization and Infection in Swine Veterinarians

- Livestock associated Methicillin-resistant *Staphylococcus aureus* (MRSA) an emerging pathogen, but not well described.
- Incidence and prevalence of SA (MRSA and MSSA) in swine veterinarians
- Skin and soft tissue infections
- Use of personal protection practices
- Quantify associations between MRSA/MSSA and pig exposure

Surveillance of Disease and Injury in Wisconsin Dairy Farmers and Workers

Matthew Keifer, MD, MPH, PI

Steven Waring, DVM, PhD

Susan Gerberich, PhD

Bruce Alexander, PhD,

Andrew Ryan, MS

Surveillance of Disease and Injury in Wisconsin Dairy Farmers and Workers

- Wisconsin Department of Agriculture (USDA NASS), the Marshfield Epidemiologic Study Area (MESA) and Marshfield Clinic Electronic Medical Records (MCEMR)
- Established population based estimates of injury and illness in dairy farmers and workers
- Track rates over time
- Identify high risk activities, conditions, associated with production practices.

Surveillance for Zoonotic Diseases in Agricultural Workers In Minnesota

Kirk Smith, DVM, PhD, PI

Joni Scheftel, DVM, MPH

Richard Danila, MPH, PhD

Carrie Klumb, MPH

Heather Fowler, DVM, MPH

Surveillance for Zoonotic Diseases in Agricultural Workers In Minnesota

Using MDH reportable disease surveillance data

- From 1996 to present identify the zoonoses of most importance to agricultural populations.
- Prospectively determine the statewide frequency of zoonoses in agricultural populations.
- Detect and characterize emerging zoonoses related to agricultural exposures
- Identify risk factors for zoonoses agricultural populations
- Develop, implement and evaluate measures to prevent zoonoses in agricultural populations.
- Occupational risks in veterinarians

Seguridad en Las Lecherias: Immigrant Dairy Worker Health and Safety

- Matthew Keifer, MD, MPH, PI
- Amy K. Liebman, MPA, MA
Migrant Clinicians Network

Seguridad en Las Lecherias: Immigrant Dairy Worker Health and Safety

- As the dairy industry changes so does the workforce with an increasing number of immigrant Hispanic workers.
- Use lay health workers to deliver culturally appropriate popular education
- Translate and apply health and safety interventions
- Improve awareness of immigrant health issues with producers, clinicians, health and safety professionals
- Evaluate the impact of these programs

Facilitating Return to Work for Injured and Ill Animal Agriculture Workers

- Matthew Keifer, MD, MPH, PI
- Steven Kirkhorn, MD, MPH
- Susan Isernhagen, PT, Consultant (DSI Work Solutions)
- Bruce Alexander, PhD

Facilitating Return to Work for Injured and Ill Animal Agriculture Workers

- Non-fatal time-loss injuries and illness in animal agriculture difficult to manage for primary care providers
- Develop compendium of light duty job tasks (LDJT) for dairy and pork
- Develop and conceptually test models for LDJT for common injuries/illnesses
- Review models as table top exercises with representative dairy and pork facilities.
- Develop prototype return to work program for clinicians, tested at Marshfield Clinic

Multidisciplinary Network to Address Agriculture Worker Health and Safety Issues

- Jeffery B. Bender, DVM, MS, DACVPM, PI
- Michele Schermann, BSN, MS
- Mary Hourigan
- Bruce Alexander, PhD
- Matthew Keifer, MD, MPH
- Others.....

Multidisciplinary Network to Address Agriculture Worker Health and Safety Issues

- Managers, trainers, and workers in livestock industry need access to up to date health and safety information
- Establish a multidisciplinary network
 - Producers, health and safety, veterinarians, medical, insurance, physical therapy, laboratory, public health
- Identify and translate known interventions to address health and safety issues
- Use network to identify emerging occupational health and safety issues in livestock workers
- Provide a platform to integrate knowledge from all UMASH activities.

Outreach

- Ruth Rasmussen, RN, MPH Coordinator
- Scott Heiberger, Communications specialist
- Joy Archibald, Web Coordinator

Outreach

- Key activity of UMASH
- Connect with stakeholders in region and beyond
 - Producers, worker representatives/organizations, health care providers, veterinarians, public health, health and safety professionals
- Provide a conduit for two-way communication

Center-wide Activities

- Alexander, Bender, Keifer, Davies, Rasmussen, Leibman
- Diane Kampa Coordinator/Evaluation Coordinator
- Debb Grove, Fiscal Officer
- (and everyone else)

Center-wide Activities

- Engaging new collaborators
- Generating new ideas
- Interaction with advisory panels
- Pilot projects
- Cross-center interactions
- NIOSH
- Evaluation

Future Plans

Use critical mass of investigators in UMASH to:

- Continue to develop research, translation, and educational projects
- Develop partnerships with stakeholders

Questions?

- www.umash.umn.edu