

# AGRICULTURAL MEDICINE:

## THE CORE COURSE

NEBRASKA JULY 8 – 9, 2025

### INTRODUCTION TO THE CORE COURSE:

KELLEY DONHAM MS DVM DACVPH

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- **My Street Cred**
- **History and Importance of Agriculture**
- **The field of Agricultural Health, safety, and Medicine**
- **Health of the Agricultural Population**



**My Field Cred**  
**My Blood Runs Green**

**June 1955**



**March 1958**



**Veterinarian**



**Present – Professor --  
Farmer**



**1955 – The Institute of Agricultural Medicine (IAM)  
1964 – 1971 – Grad Student/Researcher  
1973 – 2013 – Professor**





Compound comminuted  
fracture of tibia and fibula



- **Loading out Manure**
- **(age 14) 1960**

# Before Agriculture - Hunter Gatherers

70,000 BC – 13,000 BC





# The History of Agriculture – from ancient to present times.

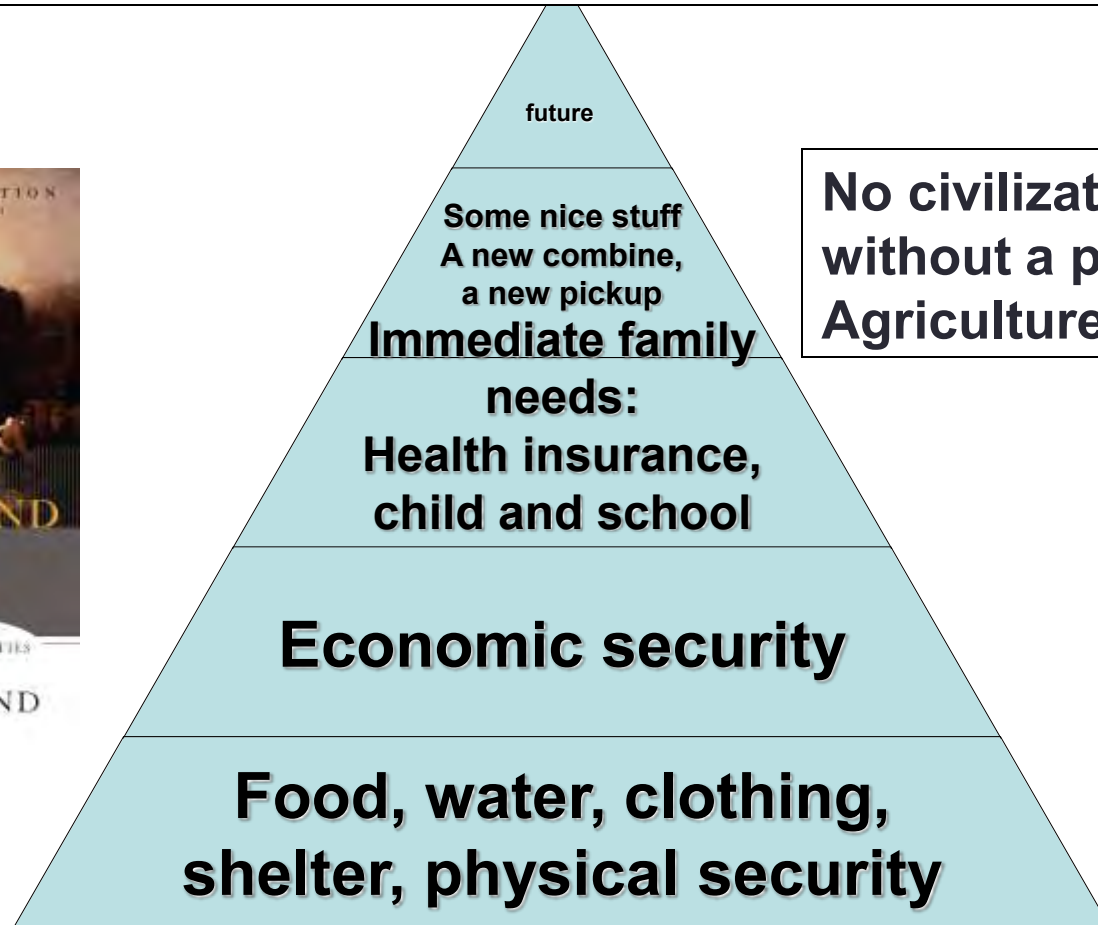
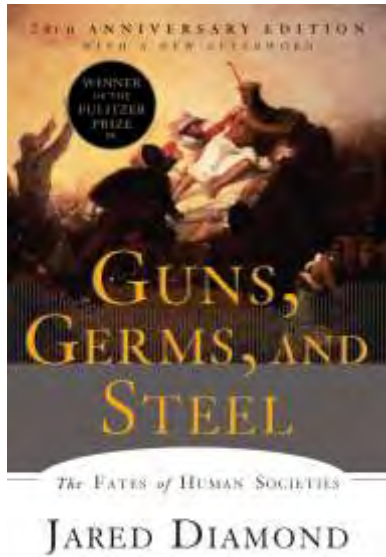


## Agriculture in the Beginning – Circa 11,000 BC – The Fertile Crescent



# THE IMPORTANCE OF AGRICULTURE TO CIVILIZATION

## Hierarchy of Peoples' Needs (A modification of Maslow 1968)

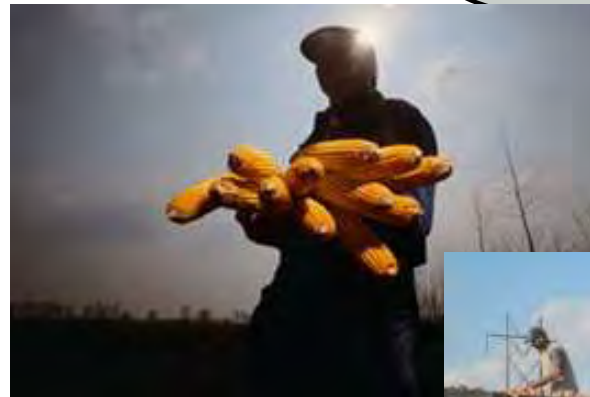
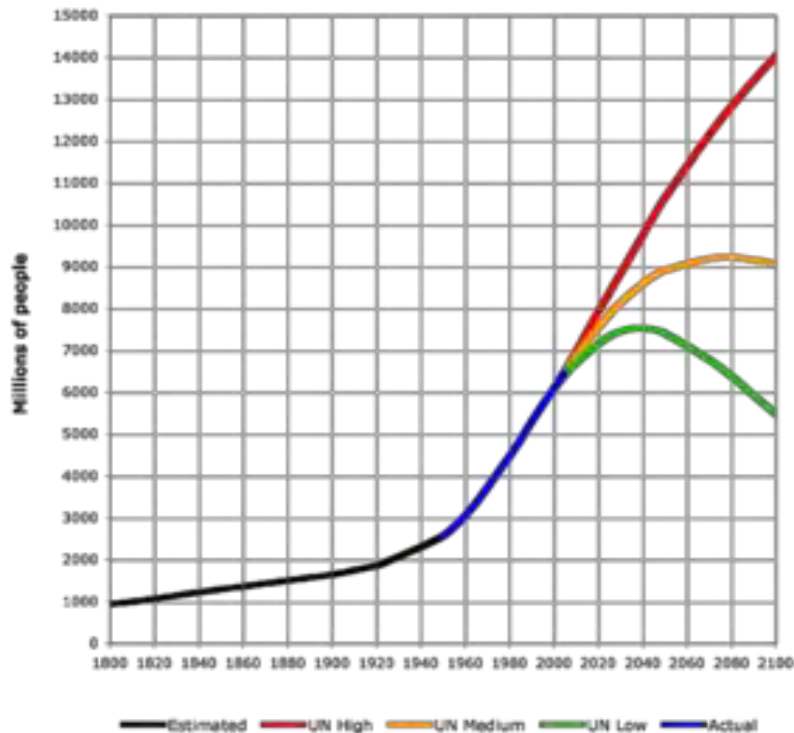


**No civilization has thrived  
without a productive  
Agriculture**

We must strive for balance between the ag economy, its people, and the environment.

# Farmers Health and Safety are Critical to Sustainability of Agriculture

- Food security
- By 2050 - the world of 6 billion – going to 9 billion





# Development of the Field of Agricultural Health and Safety

<https://pressbooks.uiowa.edu/agriculturalmedicinehistory/>

- **1940's – Agricultural Safety in Extension, Safety Council, Farm Bureau**
- **1955: The Institute of Ag Medicine.**
  - The Entre' of Public Health, Medicine, veterinary Medicine and Nursing
  - First in the world
- **1974: Beginning of Agricultural Medicine Education**
  - Training of Medical Students, 1987 – Nurses, 2006 Consensus process,
  - Certificate, MS, and PhD at Iowa
- **1987: Founding of the AgriSafe Network and this course**
- **1985 – 1990: Agriculture at Risk Policy Process.**
- **1990: Surgeon Generals Conference on Ag Health**
- **1990: NIOSH Ag Centers (10 centers today)**



James Jim Thilges had his right hand re-attached to his left arm after both arms were mangled in a corn picker. Dairy: Page 8.

## A Harvest of Harm



# The Institute of Agricultural Medicine: An Iowa Idea – Worldwide Impact

<https://pressbooks.uiowa.edu/agriculturalmedicinehistory/>



Kelley J. Donham and William McCulloch

- ❑ A history of the Institute of Agricultural Medicine at the University of Iowa,
- ❑ Research and practice of Agricultural occupational health, medicine and safety.



# The Iowa – Nebraska Connection



Iowa  
City



Institute of Agriculture Medicine 1955



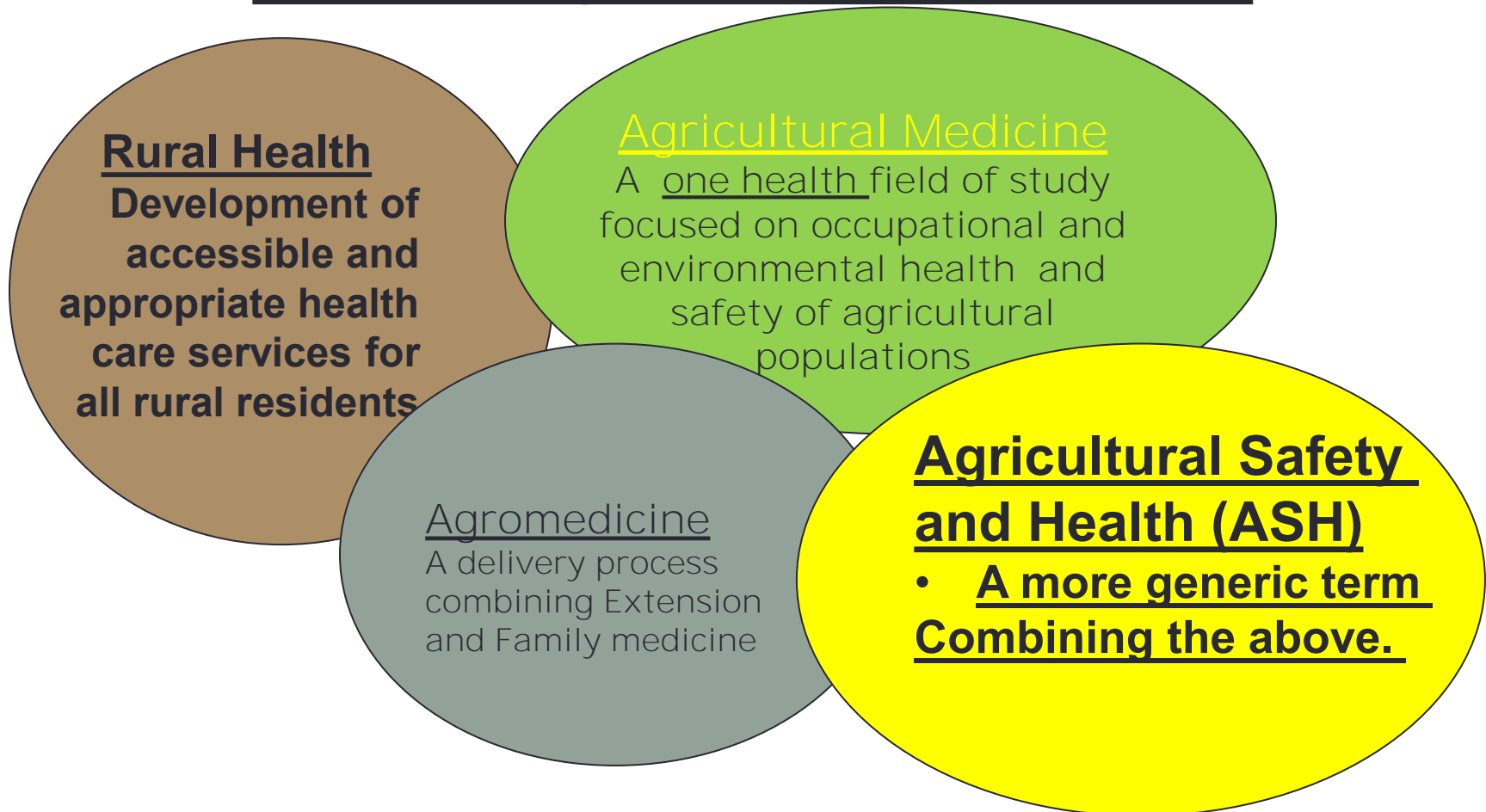
The  
University of  
Iowa



College of Public Health

# DEFINITIONS

## What is Agricultural Medicine?





● 1) The Federal Funded (NIOSH) Ag Centers (2020)

2) State Funded (Iowa, Vermont, N. Carolina) ★

But the Current Admin (Doge) has them possibly eliminated

NIOSH Centers for Agricultural Safety and Health



- |                                    |  |
|------------------------------------|--|
| 1. Bassett Healthcare              | 6. University of Iowa                                |
| 2. Colorado State University       | 7. University of Kentucky                            |
| 3. National Farm Medicine Center   | 8. University of Minnesota                           |
| 4. University of California, Davis | 9. University of Nebraska Medical Center             |
| 5. University of Florida           | 10. University of Texas Health Science Center, Tyler |
|                                    | 11. University of Washington                         |

3) Cooperative Extension

Ag Safety and Health

AG SAFETY AND HEALTH

<https://ag-safety.extension.org/>



United States Department of Agriculture  
National Institute of Food and Agriculture



## Non-profit & Professional organizations For Ag Health and Safety

**International Society for Agricultural Safety and Health**  
<https://isash.org/> (ISASH)

**Agricultural Safety and Health Council of America**  
[\(http://ashca.org/\)](http://ashca.org/) (ASCHA)



[www.agrisafe.org](http://www.agrisafe.org)



[Aghealthandsafety.com](http://Aghealthandsafety.com)



[wirurahealth.org](http://wirurahealth.org)



<https://www.progressiveag.org/>

# Foreign Ag Health and Safety professional organizations

## Foreign Activities

Canadian Center for Environmental and Agricultural Health

Australia

Victoria -- National Center for Farmers Health -

New South Wales – Ag Health Australia

Queensland – Work Safe – Agriculture

Norway

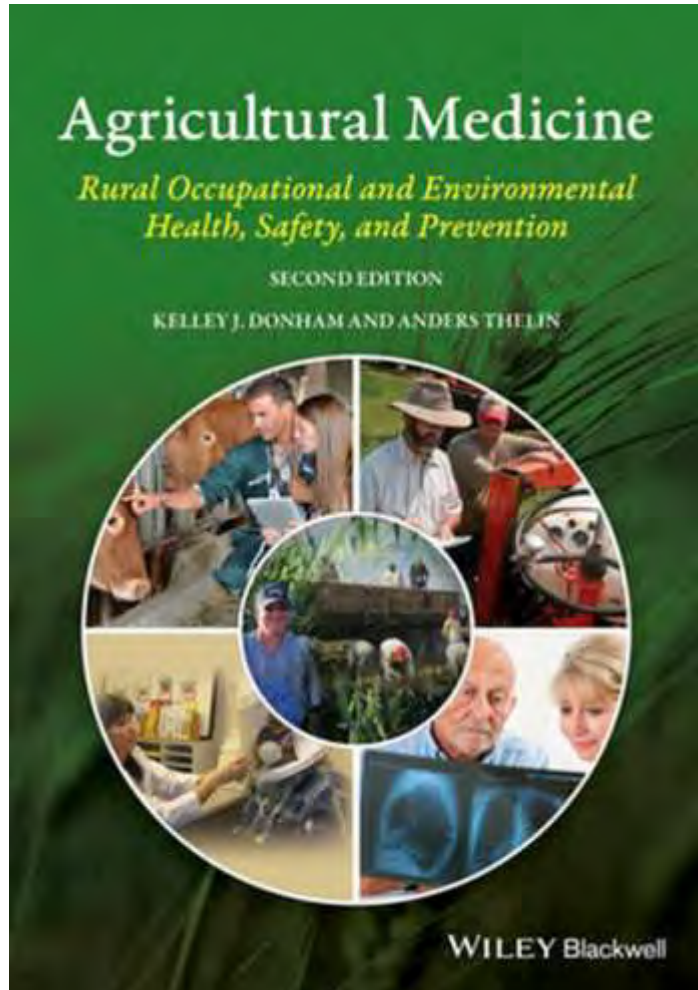
Sweden

Finland

Argentina: Federation of Farmers. Marcos Grigioni.

# Educating Health and Safety Professionals Agricultural Medicine – The Core Course

**New edition out in 2026**



1974: beginning training of medical Students  
1988: Beginning training nurses.  
2006: Beginning the One Health Core Course

**New edition due 2026**

References:

Donham and Thelin, Agricultural Medicine, 2006 1<sup>st</sup> ed., 2016, 2<sup>nd</sup> ed.

Murphy 1993, Safety and Health for Production Agriculture

Murphy, 2003, Looking beneath the surface of Agricultural Safety and Health

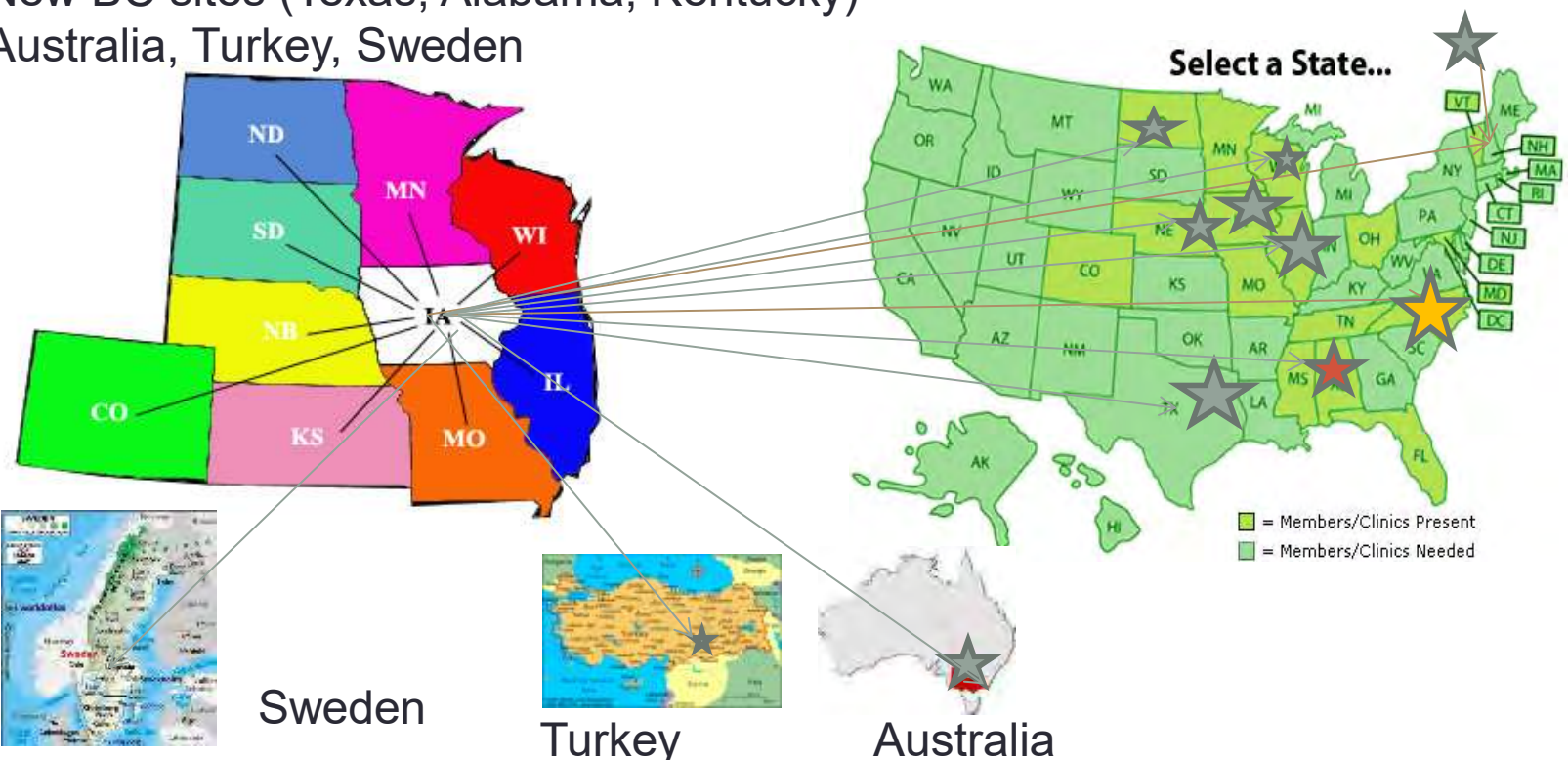
Lessinger, 2006, Agricultural Medicine; a practical approach



# Building Capacity in Agricultural Medicine

2007 – 2020 \ University of Iowa

- 1. States receiving training
- 2. New State-Based AgriSafe Networks resulting from the Program
- 3. Number of health and safety professionals trained = 850
- 4. Number of new AgriSafe Providers = 26
- 5. New BC sites (Texas, Alabama, Kentucky)
- 6. Australia, Turkey, Sweden



# Connecting the environment to the patient

- “see through” the patient to his/her environment.
- Know their Occupational environment
- Misdiagnosis = lack of knowledge of the work environment



# Agricultural medicine teaches cultural sensitivity and competency

- Attachment to the land and the work  
***“To farmers, the land is everything.”***  
(Mike Rosmann Agriwellness)
- **Work is first, their purpose in life**  
***“Farmers live to work, not work to live”***  
(Sydney, AU cab driver )
- Feeling of a **Special Calling** – Produce Food and Fiber for the rest of us
- **Proud, Independent, accept risk**
- **Acceptance** by them is by being humble, and having knowledge & respect of farm work



# What is the Relative Health Status of the Agricultural Population?

## < Mortality

- Heart attack
- Stroke
- Overall cancers
- Mental Health
- Reasons?





# But --- is the health of farmers slipping?

## Health Indicators of a Cohort of Midwest Farmers

(J. AgroMedicine. Donham, Meppelink, Rohlman and Kelly)

Iowa Farmers N = 438	National Average
BMI > 30.1%	66%
Hypertension = 15.9%	33.6%
High Cholesterol = 38.6%	37.1%

## But -- The 900 lb gorilla in farmers' health is their occupational health



# The Occupational Safety Risks of Farming

- Farming the most hazardous occupations in the U.S.
  - **523 deaths/ 2019**
    - (Dept Labor, BLS )
  - **23.1 / 100,000** (Dept Labor, BLS )
    - **> 6 x all workers**
  - **U.S. 2 – 3 times EU and Canada**
  - **21,020 injuries**, (2021-2022 cdc data)
  - **US cost \$ 11.3 Billions/yr.**
    - (Adhicari et. al AJIM, 2024)
- ❖ Children, elderly, farm workers, anabaptists are special risk groups



# Occupational Health Hazards

2024 = Topics in the course



**Special Risk Populations** (women, children, elderly, immigrant farm workers)

- **Respiratory diseases (13%)**
- **Ag Chemicals & Pesticides ,**
- **Zoonotic infections,**
- **Veterinary Pharmaceuticals,**
- **Mental Health**
- **Acute and Chronic Trauma**
- **Musculoskeletal diseases (14%)**
- **Noise, vibration, heat, cold injuries**
- **Ag Skin diseases (56%)**
- **Cancer in ag populations**
- **Prevention**



What are we here for?

Sustainable Farm Families = Sustainable Agriculture

*“Helping to Keep Farm Families and workers Alive and Well”*



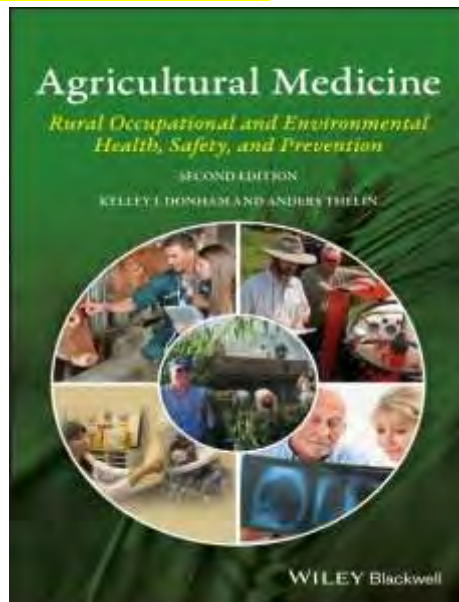
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1. **The Institute of Agricultural Medicine: An Iowa Idea – World-Wide Impact, Donham and McCulloch 2021.**

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2. **1955: The Entree of Medicine and Public Health into the Field of Agricultural Occupational Safety and Health, Journal of Agromedicine Donham, K (2022), 27:4, 409-418,**

3. **Agricultural Medicine: Rural Occupational and Environmental Health, Safety, and Prevention, Donham and Thelin, 2016**



Brian