Sector-Based Workshop

Agriculture Sector

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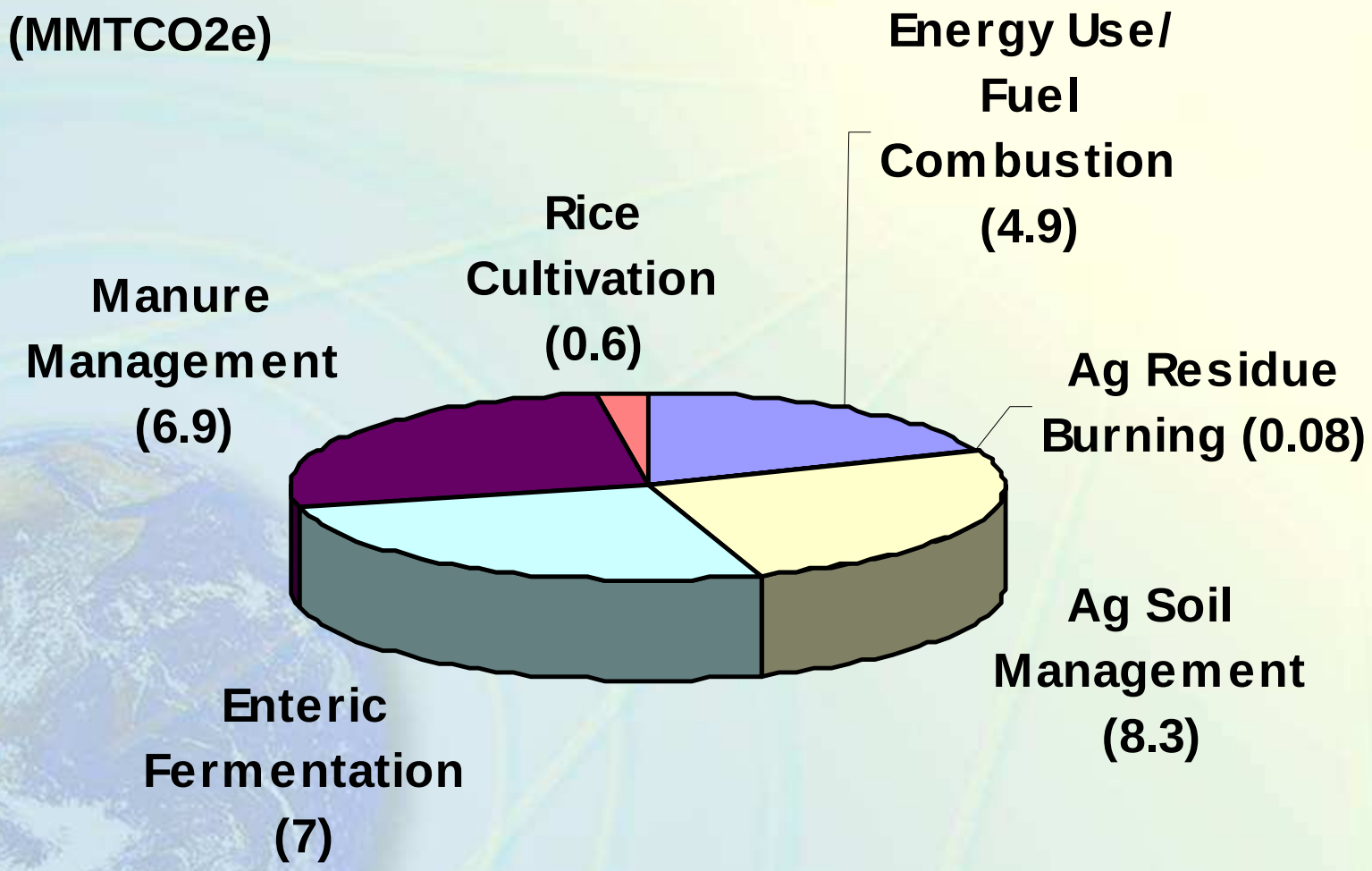
What's in the Agricultural Sector

Challenges and Opportunities

- Complex biological systems
- Diverse source types
- Life-cycle analysis complex
- Potential for sequestration and emission reductions
- Potential measures oriented toward voluntary approaches

2004 Agricultural GHG Emissions



Agricultural Emissions

- **1990 Baseline Emissions:**

  23 MMTCO$_2$E

- **2004 Baseline Emissions:**

  28 MMTCO$_2$E

- **2020 Preliminary Forecasted Emissions:**
  32 MMTCO2E

Emission Forecast Issues

- Adaptation to climate change
- Types of produce
- Efficiency
- Livestock management

Potential Agriculture Strategies

- Livestock emissions
- Energy (biomass/biofuels)
- Efficiency improvements
- Land use
- Research

Livestock Emissions

- **Reduction of GHG emissions from livestock operations**
- **Potential Approaches**
  - **Manure Management**
  - **Enteric Fermentation**

Energy (Biomass/Biofuels)

- **Use of renewable fuels in place of fossil fuels**
- **Potential Approaches**
  - **Agricultural Waste Stream Utilization**
  - **Bio-Energy Crops**

Efficiency Improvements

- **Reduce GHG emissions through more efficient agricultural practices**
- **Potential Approaches**
  - **Crop Management**
  - **Water Management**
  - **Pump Efficiency and Electrification**
  - **Conservation Tillage**
  - **Fertilizer Use Efficiency**

Land Use

- **Promote conservation and carbon sequestration through land use approaches**
- **Potential Approaches**
  - **Agricultural Easements**
  - **Agricultural Land Retirement**
  - **Farmscape Sequestration**

Research

- **Explore improved agricultural practices and their impacts**
- **Potential Approaches**
  - **Life Cycle Analysis**
  - **Best Practice Protocols**
  - **Fertilizer N_2O Emissions (Early Action)**
  - **Solar Ponds**

Emission Reduction Approaches

- **Policy Options Include**:
  - **Direct Regulation**
    - **May be feasible for some discrete aspects**
  - **Market Mechanism**
    - **Could become a source of offsets**
    - **Unlikely to be directly within a market system**
  - **Incentives**
  - **Identification of Best Practices**

Scoping Plan Process

- Climate Action Team Sub-group
- Interagency/Multi-stakeholder Agriculture Sector Scoping Workgroup
- ARB Staff Agriculture Sector Technical Team
- Scoping Plan Products
- Scoping Plan Development & Adoption

Potential Impacts of Unmitigated Climate Change on Agriculture

- Decreased milk production
- Decrease in chill hours required for fruit and nuts
- Increased risk of water shortages
- Increasing temperatures could decrease yields
- Increased pest pressure and expanded range for many agricultural pests
- Production losses in some of California's most important crops

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