AI for Ag Input(s) Optimization

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Washington State Department of Agriculture

WASHINGTON AGRICULTURE
A GLOBAL IMPACT

MAY 2025 EDITION

Top Export Markets

Source: WISER Trade, CY24

CANADA - $1.37B	TOP IMPORTS: Seafood, Apples, Cherries
JAPAN - $1.12B	French Fries, Hay, Wheat
MEXICO - $908M	Apples, French Fries, Malt
CHINA - $693M	Beef, Seafood, Hay
SOUTH KOREA - $508M	French Fries, Hay, Wheat

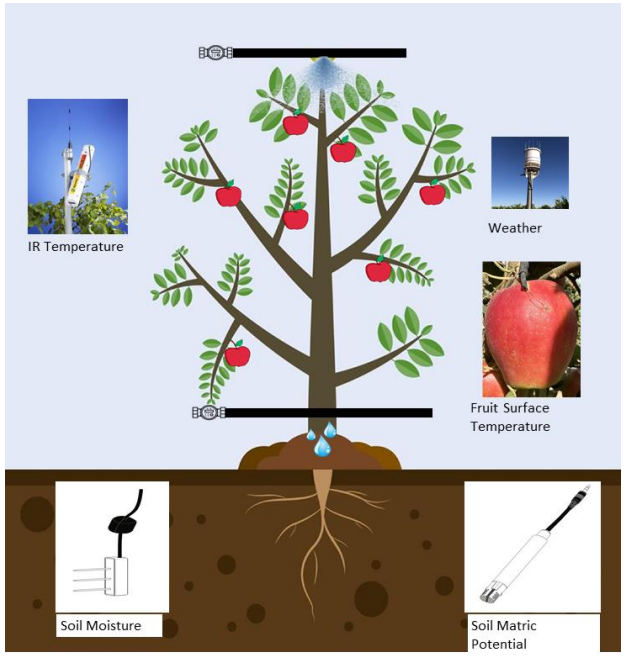
USDA National Agricultural Statistics Service, unless otherwise noted. USDA statistics exclude cannabis.

What are the Key Inputs?

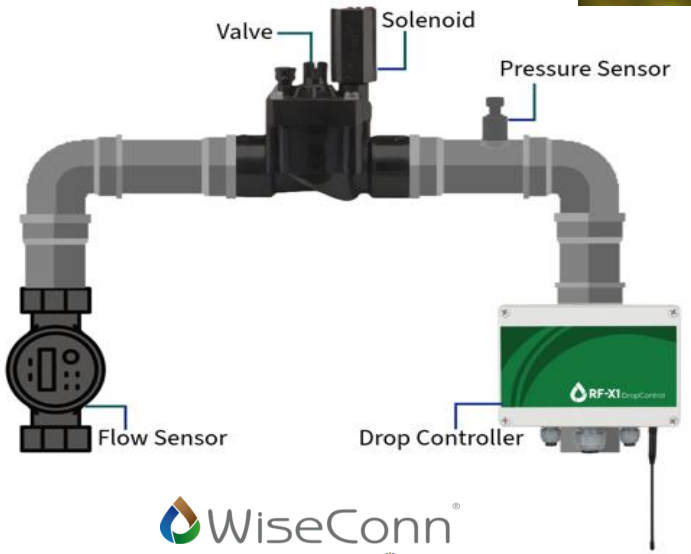
- Irrigation Water
- Fertilizers, Nutrients
- Crop Protection
  - Biotic (Inset/Pests): Chemicals
  - Frost/Heat: Water/Energy
- Labor ($17/h): Pruning, Thinning, Harvest…

Irrigation: Automation + Precision

Drip: 20-52% Water Saving



Sensing → Climatic Model



WiseConn
SWAN systems
Dynamax

Automation

AI

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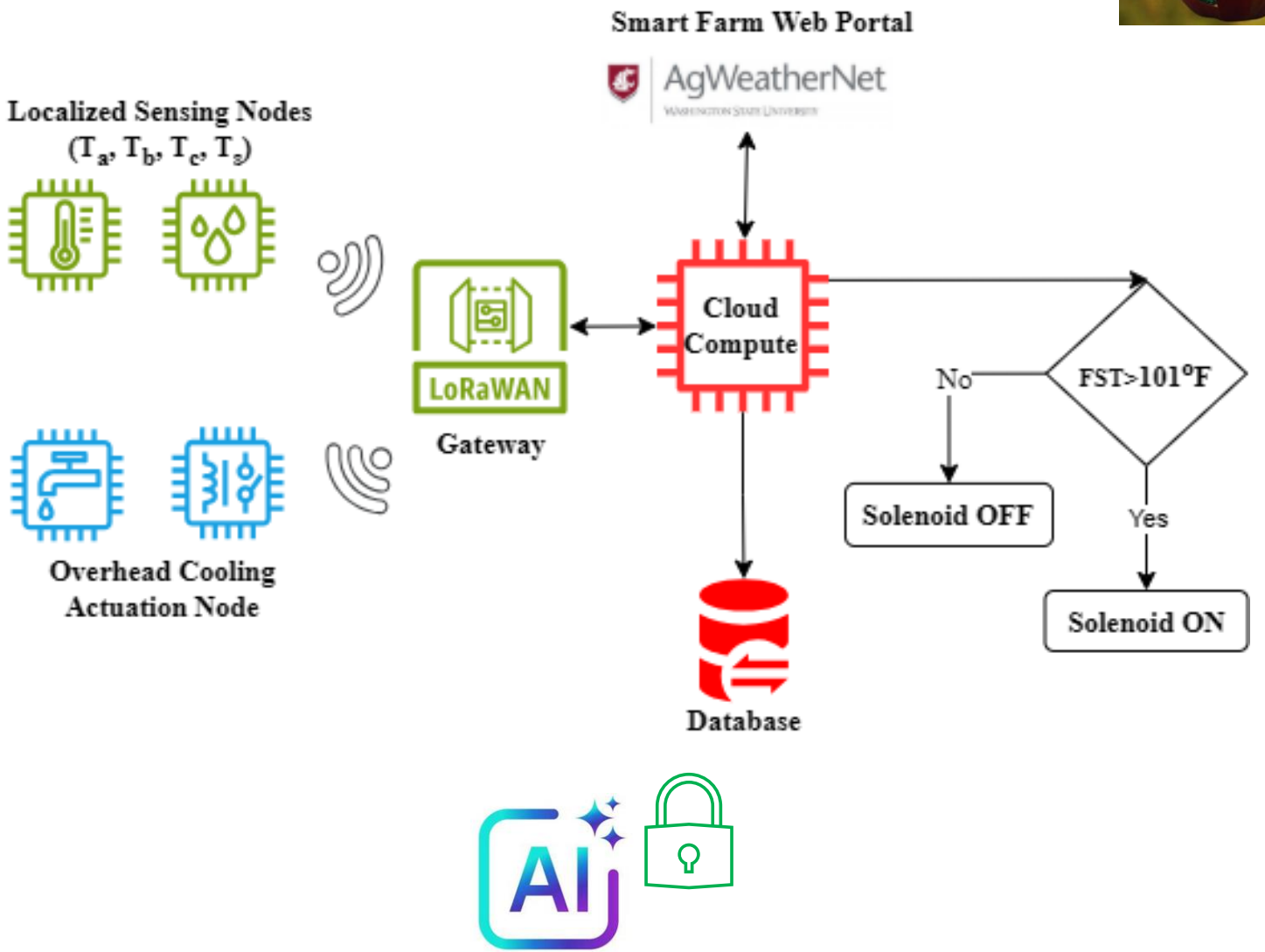
Team: Gorthi, Bhalekar, Munguia, Khot, Sallato, Peters

WASHINGTON TREE FRUIT RESEARCH COMMISSION

Heat Stress Automation + Precision

Cooling: 46-50% Water Saving



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WASHINGTON TREE FRUIT RESEARCH COMMISSION

Heat Stress Mitigation (Apple/Grape/Blueberry)

AI-powered canopy/ fruit stress prediction & color progression monitoring tool

iOS

Thermal-RGB imager ($400) w/smartphone

Deployed 370 AgWeatherNet stations + connected to global weather network

Team: Thennakoon, Amogi, Verukutti, Khot, Sallato, Keller, Hoheisel

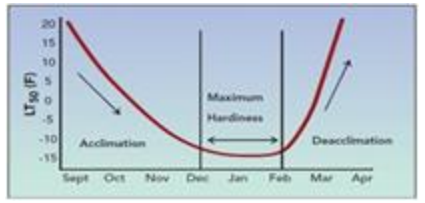
Frost Mitigation in Fruit crops

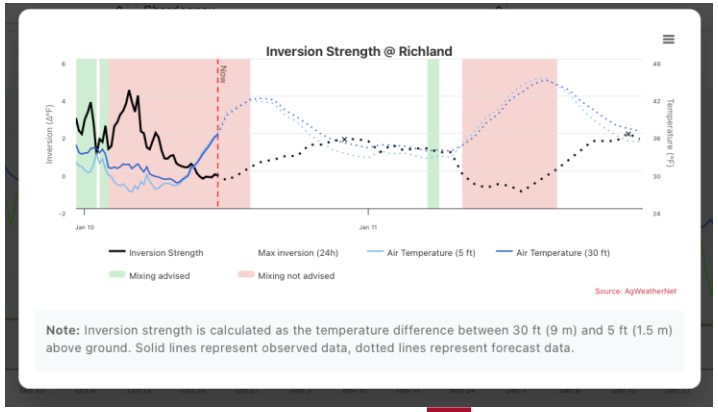
Sweet Cherry

Grape

Blueberry

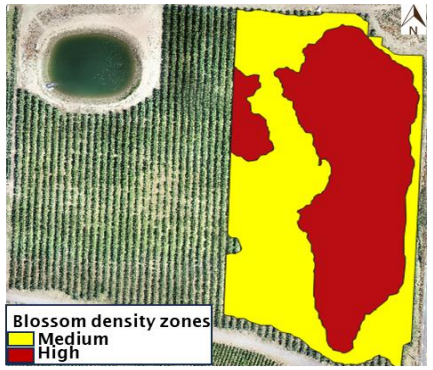
Blackberry

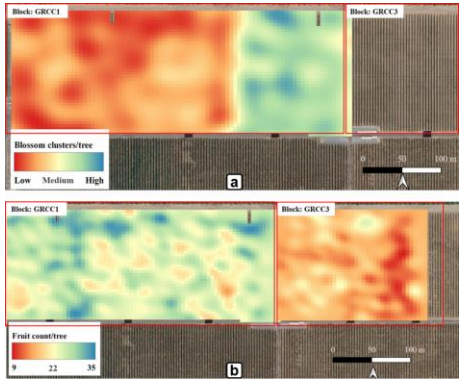


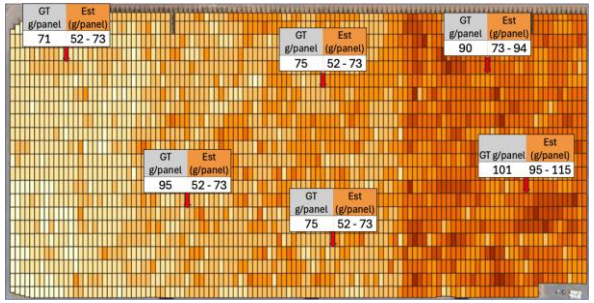


Team: Khot, Keller, Pesantez, Hoheisel, Kalyanaraman, Amogi (WSU), Fern (OSU), and AgWeatherNet

Crop Load: Mapping to Precision Management







- **Thinning** (Blossom, Green Fruit)
- **Nutrients** Management
- **Chemical** Applications

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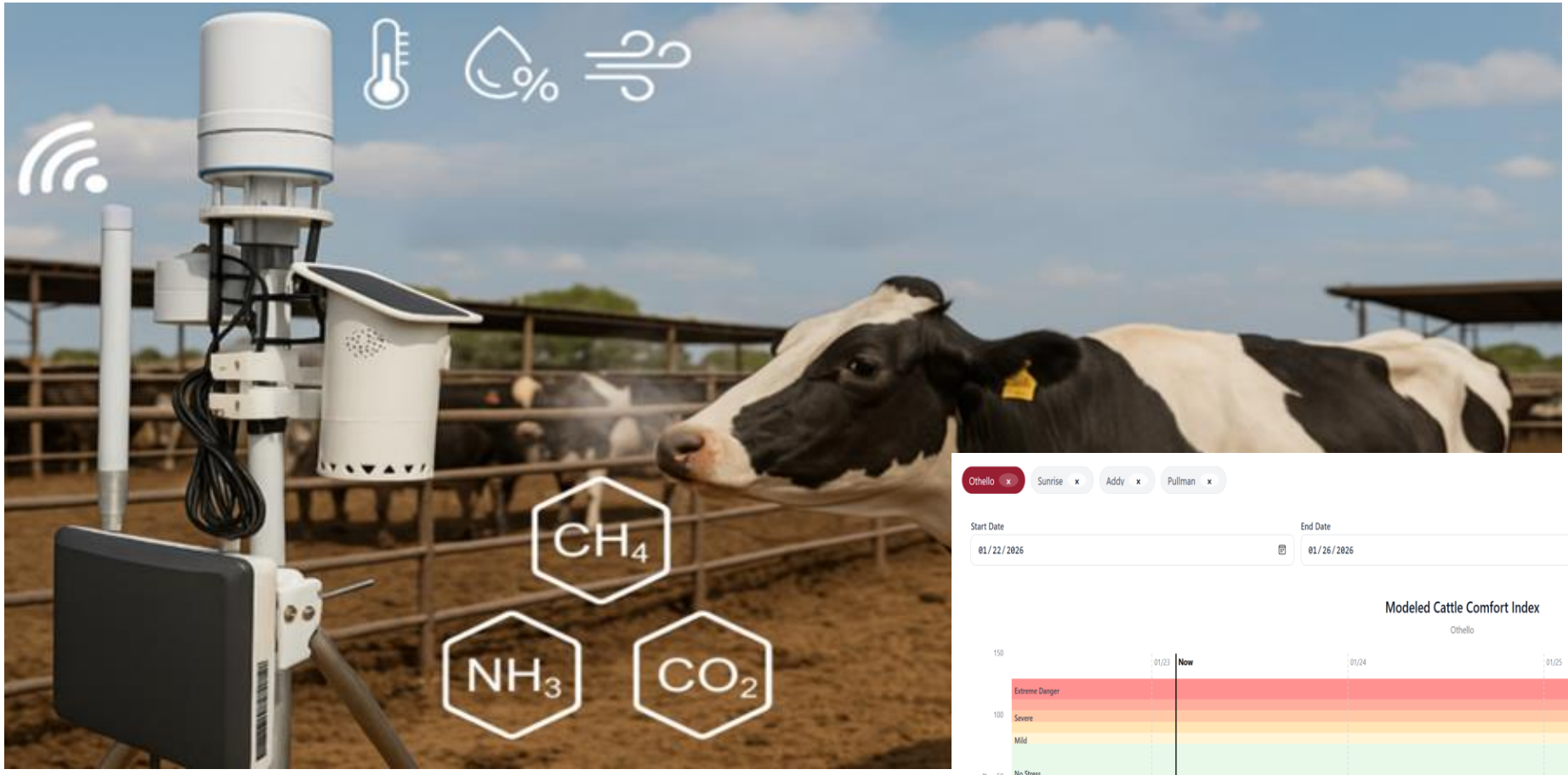
Team: Bhalekar, Munguia, Sallato, Khot, Hoheisel, Mantle

WASHINGTON TREE FRUIT RESEARCH COMMISSION

Precision Livestock Farming

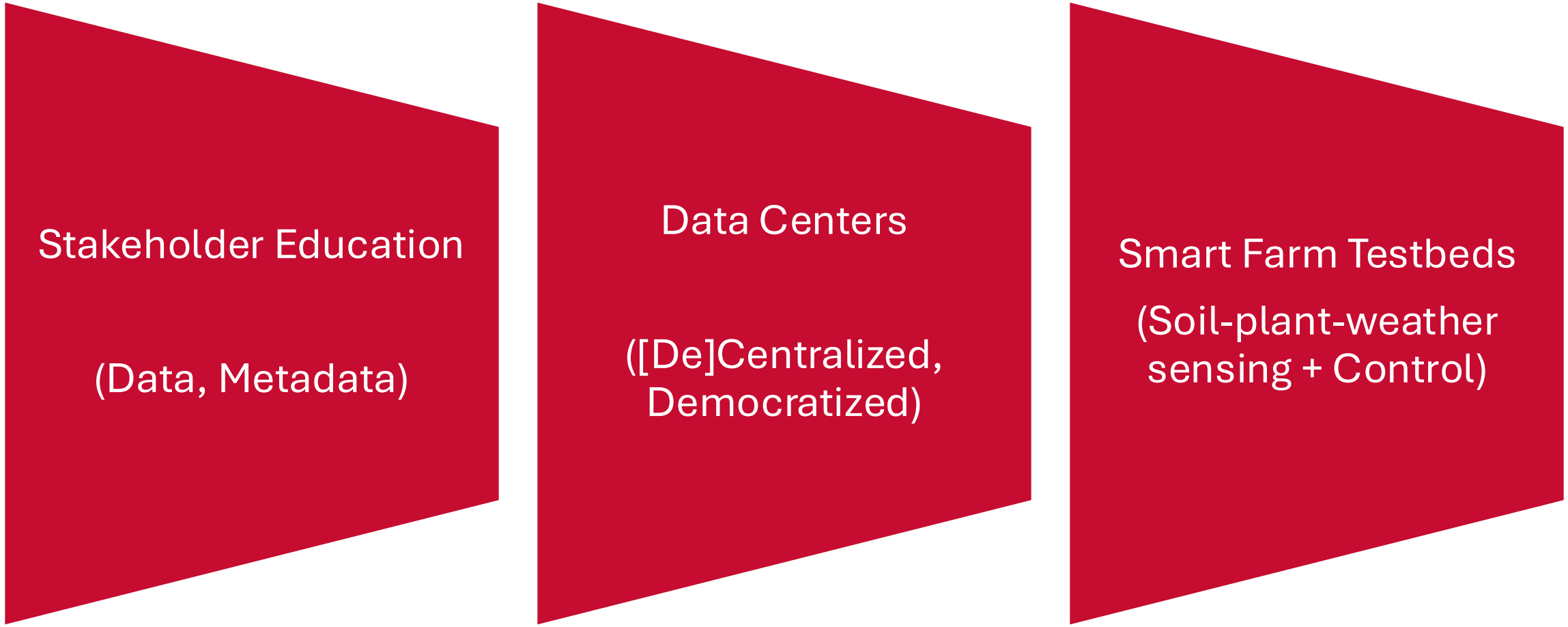


Team: Khot, Dadallage, Smith (WSU), Leal-Yepes(Cornell), and AgWeatherNet

Conventional

Smart/Digital Switch

AI-Readiness: Key Enablers



(Public-Private Partnerships)

Thank you!

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