OVERVIEW

• BASIC ABOUT CEMA

• TWO EXAMPLES OF DECISION SUPPORT SYSTEMS
  • IRRIGATION SCHEDULING
  • PLANT DISEASE RISK

• FINDING A BETTER WAY COLLECTIVELY
CEMA & CLIMATE OFFICES

OUR MISSION TO DELAWARE:

STATE CLIMATE OFFICES (SCO’S):

• FUNCTION LIKE EXTENSION, BUT FOR CLIMATE INFORMATION
• HAVE BEEN DOING CLIMATE OUTREACH, BEFORE CLIMATE OUTREACH WAS “COOL”
• EVERY STATE IN NORTHEAST HUB REGION HAS A STATE CLIMATOLOGIST, EXCEPT MASSACHUSETTS
• PROFESSIONALLY ASSOCIATION: AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS (WWW.STATECLIMATE.ORG)
THE DEOS NETWORK

- Founded in 2003 (Operational in 2004)
- Primarily funded through State partners
- State Climate Office affiliated
- 1 of 3 State Mesonets in Northeast Region
  - New Jersey and New York
  - Pennsylvania coming soon!
- 57 real-time weather stations
  - 44 in Delaware
  - 11 in Pennsylvania
  - 2 in Maryland
- 17 real-time pond/lake monitoring stations
HIGH DENSITY PROVIDES GOOD, LOCAL DATA
IRRIGATION SCHEDULING

HTTP://DIMS.DEOS.UDEL.EDU
IRRIGATION IN DELAWARE

• ~ 35% OF DELAWARE CROPLAND IS IRRIGATED TODAY (MOSTLY CORN & SOYBEAN)

• HIGHLY VARIABLE SUMMERTIME PRECIPITATION IS COMMON IN DELAWARE

• VERY SANDY SOILS WITH LOW WATER-HOLDING CAPACITIES, PARTICULARLY IN SUSSEX COUNTY

• IRRIGATION PROVIDES “INSURANCE” AGAINST PROLONGED DRY AND/OR HOT PERIODS AT THE HEIGHT OF THE GROWING SEASON
DELAWARE IRRIGATION MANAGEMENT SYSTEM (DIMS)

- FUNDED BY USDA NRCS AND DNREC
- LAUNCHED IN 2012
- PROVIDES ESTIMATES OF CROP WATER AVAILABILITY AT FIELD SCALE USING FAO-56 METHOD
- WEB-BASED TOOL
- AUTOMATICALLY DETERMINES WEATHER AND SOIL DATA BASED ON FARMER PROVIDED FIELD LOCATION
- MINIMAL INPUT FROM FARMER: FIELD NAME, LOCATION, CROP TYPE, AND EMERGENCE DATE.
- SERVES APPROXIMATELY 100-120 FIELDS A YEAR
- MOSTLY USED FOR FIELD CORN AND SOYBEAN, BUT SOME CUCUMBERS AND LIMA BEANS ALSO.
PLANT DISEASE RISK

HTTP://DIMS.DEOS.UDEL.EDU/LIMABEANRISK
LIMA BEAN DISEASE RISK TOOL

• #2 PRODUCER IN THE U.S.
• ~ 15,000 ACRES GROWN/YEAR
• LIMA BEANS ARE THE CORNERSTONE OF VEGETABLE PRODUCTION INDUSTRY
• COLLABORATION WITH UD COLLEGE OF AG RESEARCHERS AND VEGETABLE EXTENSION
• USDA NIFA SCRI FUNDED PROJECT
• LAUNCHED IN 2017
  • PROVIDED DISEASE RISK FOR OVER 70 FIELDS FOR 3 MAJOR VEGETABLE PRODUCERS
LIMA BEAN DISEASE RISK TOOL

- Fields are defined and associated with individual users/producers.
- Derived from two primary models:
  - Hyre (1964): Disease history, air temperature, rainfall.
  - Raniere (1952): Disease history, air temperature, and dewpoint hours.
- Risk model accounts for:
  - Cultivar susceptibility.
  - Field disease history.
  - Weather conditions.
- Weather information derived through interpolation of DEOS mesonet data.
LIMA BEAN DISEASE RISK TOOL
LIMA BEAN RISK TOOL

Graphs and Data for the Users
- Risk Scores
- Base elements of risk models

Goal: Reduce production costs by reducing number of spray applications
SO NOW WHAT...
DATA INTEGRATION

DEOS NETWORK DATA HAVE BEEN INTEGRATED INTO:

• PENN STATE UNIVERSITY WHEAT SCAB MODEL VIA PA STATE CLIMATE OFFICE
• NEWA (LIMITED) VIA NORTHEAST REGIONAL CLIMATE CENTER

• WHAT ABOUT OTHER EFFORTS IN OTHER REGIONS?

WHERE DO WE GO?

HOW MANY STOPS?
IS THERE A BETTER WAY?

• DECISION SUPPORT TOOLS ARE QUITE OFTEN DATA LIMITED, BUT USUALLY NOT FOR TECHNICAL REASONS.

• INSTITUTIONALLY LIMITED

• DATASETS FOR REGIONAL/NATIONAL PRODUCTS ARE READILY AVAILABLE FROM RELIABLE SOURCES (ACIS VIA THE RCC’S, NDFD/RTMA VIA NWS, ETC.)

• DUPLICATION OF EFFORTS

• THERE’S GOT TO BE A BETTER WAY.
HOW DO YOU ATTRIBUTE THE ORIGINAL DATA WHEN IT’S BLENDED IN WITH “BIG DATA”?

DATA

WHERE DOES FOOD COME FROM?
WHO PAYS FOR THE APPLICATIONS TO BE UPDATED AND MAINTAINED?
THANKS!