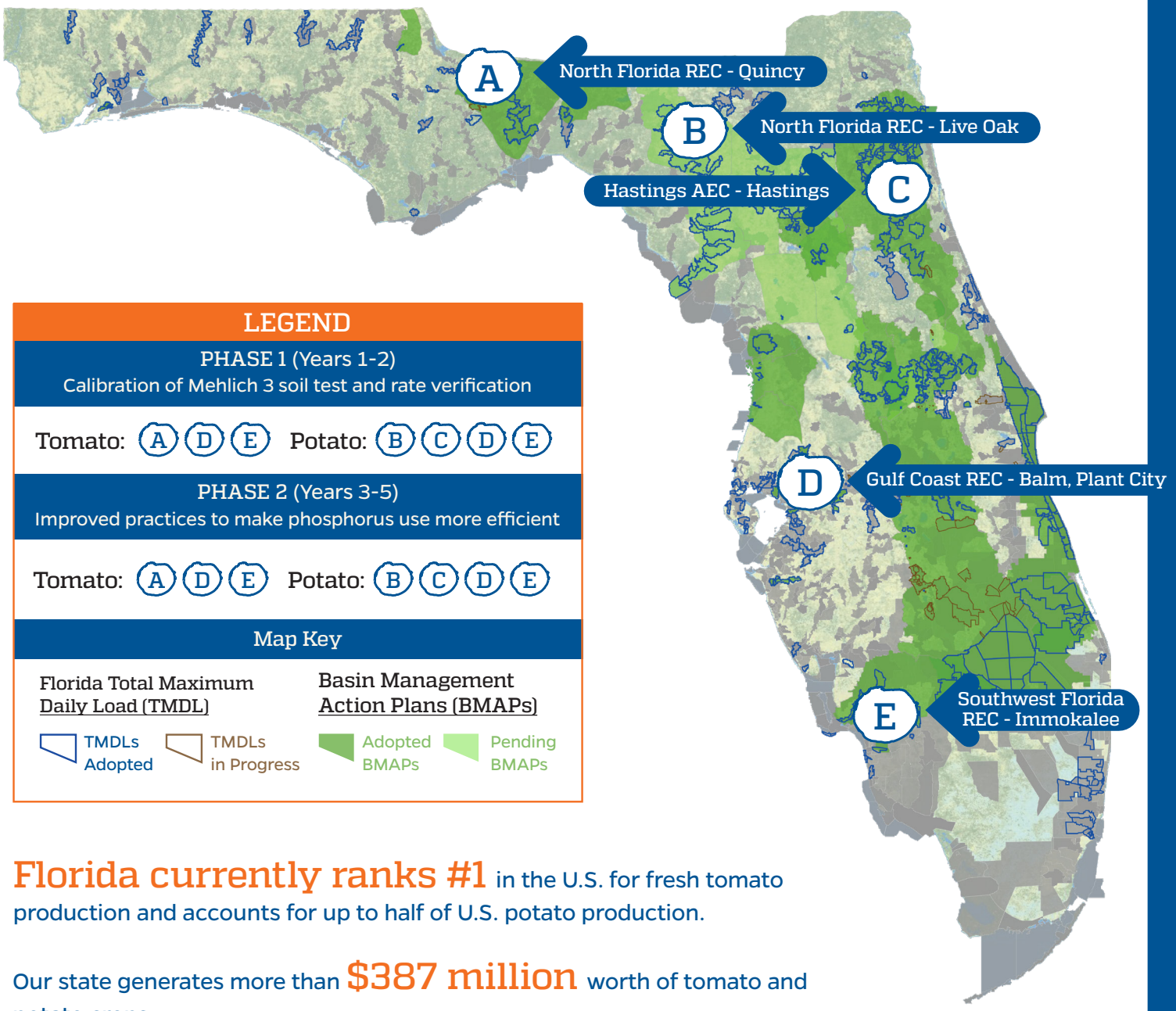
UF IFAS
UNIVERSITY of FLORIDA

Fertilizer Rates Research

for Crop Growth and Environmental Protection

UF/IFAS will be conducting research to assess, update and validate recommended fertilizer application rates and practices for the Florida agriculture industry. **The map below illustrates the initial crops, type of research, and areas where the studies will be located.** This research will provide modernized, science-based fertilizer application rates **ensuring farmers can protect the environment while growing food for the nation.**



LEGEND

PHASE 1 (Years 1-2)
Calibration of Mehlich 3 soil test and rate verification

Tomato: A D E Potato: B C D E

PHASE 2 (Years 3-5)
Improved practices to make phosphorus use more efficient

Tomato: A D E Potato: B C D E

Map Key

Florida Total Maximum Daily Load (TMDL)
- TMDLs Adopted
- TMDLs in Progress

Basin Management Action Plans (BMAPs)
- Adopted BMAPs
- Pending BMAPs

Florida currently ranks #1 in the U.S. for fresh tomato production and accounts for up to half of U.S. potato production.

Our state generates more than **$387 million** worth of tomato and potato crops.

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Florida agriculture needs updated fertilizer application recommendations and production practices to promote environmental sustainability and productive agriculture.

Crops need nutrients to grow. Too little fertilizer reduces the plants ability to produce food. Too much fertilizer can result in unused nutrients lost to soil, water and air. **UF/IFAS scientists have a long record of teaming up with Florida farmers and environmental agencies to find solutions.** In the 1970s and 80s, UF/IFAS established recommended fertilizer application rates that are still used today.

Since then, farming techniques, improved varieties, advanced technology and nutrient management practices have adapted, evolved and become more efficient over the years. Research has continued over the past 20 years, but the recommendations need improvement to keep up with Florida's evolving agriculture and increasing environmental concerns.

Recognizing the state's need, UF/IFAS has developed a research plan to assess, update, and validate current nutrient application recommendations through field trials. The research will be conducted by teams of professionals in key geographic regions of the state **including UF/IFAS Experiment Stations and local farms.** The recommendations will recognize the regional diversity of the state's environment, soil conditions and uses of production practices starting with tomatoes and potatoes.

UF/IFAS has invested

$147,000

to kickstart the project

Simultaneously, UF/IFAS will develop an artificial intelligence (AI) database on nutrient recommendations. AI is capable of merging diverse data streams that can be utilized to analyze huge amounts of data on plant growth, yield, amount of fertilizer in the soil, water quality and more. The AI database will equip researchers with computational abilities to update recommendations for current and future crops.

To form the AI database, teams of students in agricultural and engineering disciplines will work with local farmers to establish experiments on 10 farms. They will gain hands-on experience working with AI tools as they collect necessary crop nutrient data, explore ways to improve data flow, and interact across different data sources.

4 teams

Each Regional Research team includes: 1 faculty, 2 staff and 2 students

UF/IFAS is requesting a base increase of $3,670,694 through the Workload funding request to provide solutions to problems and challenges faced by the agriculture community and our natural resources. A portion of Workload funds will be utilized to support these research activities.

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