



TECHNOLOGY READINESS LEVEL

8-10

Seeking

Investment | Licensing | Research

Keywords

- Food Security
- Remote Plant Disease Diagnosis
- Pest Control
- Predictive Data

Researchers

David Hughes

Assistant Professor of Entomology and Biology

[Online Bio](#)

[Website](#)

Marcel Salathé

Co-Founder

Originating College

College of Agricultural Sciences

Office of Technology Management Contact

Swope, Brad

bas101@psu.edu

814-865-6277

Persea mites

ARACHNID

Oligonychus perseae



Symptoms of mite feeding on avocado leaf



Mite damage on leaf underside



Mite damage on avocado fruit

PlantVillage Examples

Technology Summary

PlantVillage is a platform that automatically diagnoses plant diseases using computer vision tools and machine learning algorithms. It connects people growing food with the largest social network of crop health solutions. The algorithms for classifying diseases have been shown to work with a 99% accuracy. The researchers collected 150,000 images to train such algorithms. The algorithms are also now being developed on phones. The social networking platform is currently four years old and has over three million users. The annual growth rate for the platform is 250%.

Application & Market Utility

There are 76 land grant institutions and multiple Agricultural Research Stations operated by the USDA to stop import of diseases/pests. Each center requires point-of-care diagnosis and the opportunity for model transfer. Food security is a massive area of investment at local, state, federal, and international levels. Recently, Congress passed the Food Security Act that authorized \$1 billion for President Obama's Feed the Future program. Agriculture accounts for 10% of GDP but has only received 3.5% of investment, which suggests a high potential for growth.

Next Steps

Seeking research collaboration and licensing opportunities.



Invent Penn State is a Commonwealth-wide initiative to spur economic development, job creation, and student career success. Invent Penn State blends entrepreneurship-focused academic programs, business startup training and incubation, funding for commercialization, and university-community collaborations to facilitate the challenging process of turning research discoveries into valuable products and services that can benefit Pennsylvanians and humankind. Learn more at invent.psu.edu.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability or protected veteran status.