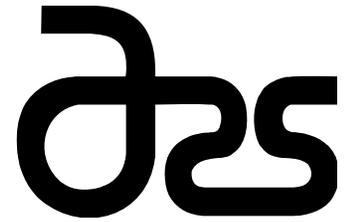# ARS and NPDN

Gail Wisler, National Program Leader, Horticulture and Sugar

Deborah Fravel, National Program Leader, Plant Health

Office of National Programs

Beltsville, MD

Douglas Luster, Research Leader,

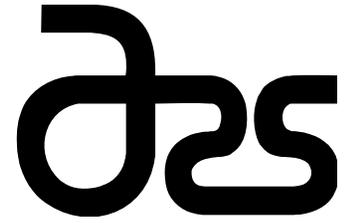Foreign Disease-Weed Science Research Unit

Ft. Detrick, MD

Agricultural Research Service

- ARS is the chief scientific research agency of USDA

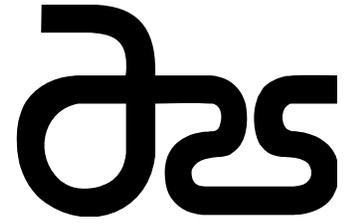George Washington Carver Center
Beltsville, MD

ARS and NPDN

We all share a stake in our national security

Although the roles of ARS and the NPDN are distinct, there is overlap and convergence for:

- crop security

- improved diagnostics

- monitoring and survey

- communications (the "Network")

- national coordination

NPDN has provided to ARS:

- A nationally networked platform for communications
- A system of trained, equipped state clinics with which to coordinate
- Connections beyond U.S. borders (pest origin)
- A pulse on what is new and emerging
- Resource for data and communications
- A destination for ARS/APHIS diagnostics technology
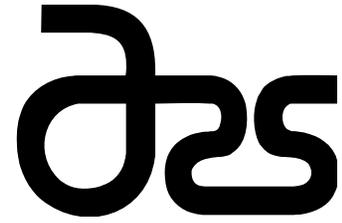
ARS Support and Interaction with NPDN:
Training

- ARS, with financial support from APHIS, conducted "Train the Trainer" workshops at the FDWSRU Plant Pathogen Containment facility at Ft. Detrick, MD for the NPDN diagnosticians and other plant pathologists in 2003 and 2004, at the request of CSREES. (Note: Dr. Ray Schneider from LSU attended, and was the first identifier of Asian soybean rust in the U.S. as a result)

- In March 2005, ARS hosted an NPDN diagnosticians workshop at the FDWSRU Plant Pathogen Containment facility at Ft. Detrick, MD. Concomitant training was held at Beltsville to train diagnosticians on the soybean rust molecular diagnostic assay developed by Dr. Reid Frederick at ARS FDWSRU Ft. Detrick MD.

# 2005 Soybean Rust diagnostic Training at ARS FDWSRU Ft. Detrick, MD
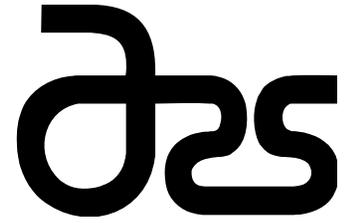
ARS Support and Interaction with NPDN:
Training

- Mock field exercise conducted in 2004 by the USDA soybean rust action plan emergency response team (including APHIS/ARS/CSREES) in MN for rapid response to soybean rust- before first U.S. identification in LA.

- After first U.S. identification in 2004, APHIS/ARS/CSREES USDA soybean rust action plan emergency response team was deployed to Baton Rouge LA for confirmation and delimitation of outbreak.

ARS Support and Interaction with NPDN: *Diagnostics*
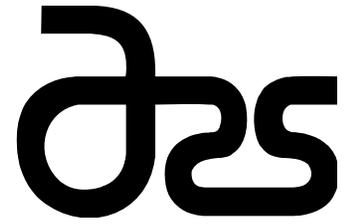
- 2002 Homeland Security Rapid Pathogen Detection Initiative; $100K provided for purchase of Cepheid Smartcyclers for NPDN hub labs

- Whereas, some labs had only a microscope and a refrigerator in 2001, most now have molecular diagnostic and digital microscopy capability.

- Led to harmonization of methods across labs;

Ring Test of ARS P. pachyrhizi PCR diagnostic with NPDN hub labs and APHIS:

# Early Detection of Asian Soybean Rust Using PCR

Kurt H. Lamour and **Ledare Finley,** University of Tennessee, Department of Entomology and Plant Pathology, Knoxville 37996; **Karen L. Snover-Clift,** Cornell University, Department of Plant Pathology, Ithaca, NY 14853; **James P. Stack** and **Joy Pierzynski,** Kansas State University, Department of Plant Pathology, Manhattan 66506; **Ray Hammerschmidt, Janette L. Jacobs,** and **Janet M. Byrne,** Michigan State University, Department of Plant Pathology, East Lansing 48824; **Philip F. Harmon** and **Anne M. Vitoreli,** University of Florida, IFAS, Department of Plant Pathology, Gainesville 32611; **Gail C. Wisler,** Director, and **Carrie L. Harmon,** Southern Plant Diagnostic Network, University of Florida, IFAS, Department of Plant Pathology, Gainesville 32611; **Laurene Levy** and **Kurt A. Zeller,** USDA-APHIS PPQ CPHST National Plant Germplasm and Biotechnology Laboratory, Beltsville, MD 20705; and **Christine L. Stone, Douglas G. Luster,** and **Reid D. Frederick,** USDA-ARS, Foreign Disease-Weed Science Research Unit, Ft. Detrick, MD 21702

ARS Support and Interaction with NPDN:
Diagnostics

- 2009- present – ARS FDWSRU Ft. Detrick scientists are propagating and providing *P. ramorum* -infected and control rhododendron tissue for SOD proficiency testing at NPDN labs, with APHIS funding
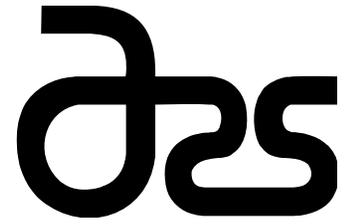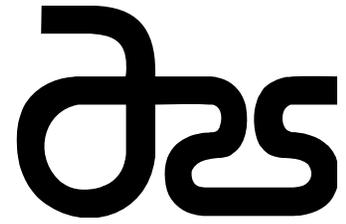
ARS Support and Interaction with NPDN:
Diagnostics

SPDN testing the specificity of a PCR diagnostic developed by Dr. Les Szabo, ARS CDL St. Paul, MN
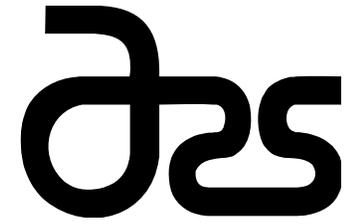

Wheat stem rust Pgt Ug99

ARS Support and Interaction with NPDN:
## *Technology Transfer*

- ARS scientists serve as subject-matter experts in the writing and/or reviewing of NPDN SOPs
- NPDN labs apply methods and techniques generated by ARS SY's

NPDN Bridges Gaps!

- Between local, states, regional, federal; extension, education and research
- Critical communications network provided
- ARS will continue to provide research to assist in mitigation efforts
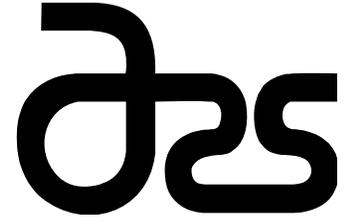
NPDN has made itself indispensible
We can't go back!

- NPDN has brought each state diagnostic clinic up to a minimum level of capacity, which has become a high standard across labs.