

NOTICE - Pioneering ARS Drainage Research “Stories” available for Viewing or Downloading from Transforming Drainage Project Website at Purdue University:

<https://transformingdrainage.org/the-beginning-of-modern-tile-drainage/>

The Beginning of Modern Subsurface (Tile) Drainage

1960-1974 USDA-ARS Drainage Materials & Equipment Research “Stories”



by James L. Fouss, Ph.D., P.E., D.WRE

JLFouss@gmail.com

Private Consulting Agricultural Engineer
at Drainage Engineering & Management, Cedar Park, TX.

Background:

The year 2015 was the 50th Anniversary of the beginning for the corrugated-wall HDPE plastic drainage pipe manufacturing industry in the United States. I am proud that I and a co-worker colleague (Dr. Norman R. Fausey*), working for the USDA, Agricultural Research Service, Soil and Water Conservation Research Division, and stationed at The Ohio State University, conducted the pioneering research with promising results that helped this industry get its start in 1965. A paper on the early research project results was presented on corrugated plastic drain tubing installed with a modified mole-drainage plow (not a trencher) at the first National Drainage Conference held in December 1965 at Chicago that was sponsored by the American Society of Agricultural Engineers. That paper has often been referenced by drainage industry officials as the foundation paper that attracted the U.S. Drainage Tile Industry’s attention to begin a new revolutionary era of manufacturing corrugated-wall plastic subsurface drainage pipe materials and promoting plow-in methods of installation. This new plastic drain and the plow-in method for installing it also led our research team to begin working with an industry cooperator engineer** in developing an experimental Laser-Beam automatic depth and grade-control system for the high-speed drainage plows and modern higher speed tile trenching machines.

Many details and challenges encountered in the research had never been documented or published, although some special details and events were reported verbally at some engineering meetings. Early phases of the research involved developing improvements in the plastic-lined mole drainage channel concept, but through field experiments the long-term structural stability of the thin-walled plastic mole liner was found to be poor and therefore not acceptable. When corrugated-wall plastic tubing (*originally developed in Germany*) became available in the U.S. early in 1965, it was adopted for research and evaluation in the USDA-ARS drainage materials phase of the project. The activities and events of the overall research project were written in three main subprojects that made up the comprehensive research project. The three subprojects were written in separate stories, as follows:

- *ARS Story on the R&D for the American version of Corrugated-Wall Plastic Drainage Tubing and Plow-In Method of Installation;*
- *Story behind the Story about the ARS Coop R&D Project for Laser-Beam Grade-Control on a Draitube Plow; and,*
- *Story behind the Story on the Development of the ARS “Big Red” Draitube Plow with Laserplane Automatic Grade-Control System.*

All three main “Stories” and supporting documents are now available in PDF format and can be viewed and/or downloaded from the Transforming Drainage project website noted above. Original printed copies of the research “Stories” and many of the supporting publications and reports were provided as historical reference documents on the pioneering drainage research developments for the Drainage Research History Section of the **International Drainage Hall of Fame** housed in the Department of Food, Agricultural and Biological Engineering at The Ohio State University, 590 Woody Hayes Drive, Columbus, OH 43210. In the future these “Stories” and all the supporting publications and documents (in PDF format) will also be available for viewing and/or downloading from a free website at The Ohio State University.

It is hoped that the “Stories” may provide some ideas and hints to future drainage researchers with pioneering ideas on ways to overcome barriers to research progress, including limited project funding and skepticism by research administrators, in their own revolutionary research and development drainage projects to further improve drainage technology in the years ahead.

** Dr. Norman R. Fausey (USDA-ARS Research Leader at Columbus, OH).*

***Mr. Ted L. Teach (former President & CEO of Laserplane Corp., Dayton, OH).*

NOTICE 2: In the future a Webinar on this Pioneering ARS Research Project will be illustrated with many color slides and narrated by Dr. James L. Fouss, and it will also be available for viewing and/or downloading from the Transforming Drainage website.

The project researchers appreciate the assistance and cooperation of Dr. Jane R. Frankenberger, Professor; and Mr. Benjamin D. Reinhart, Transforming Drainage Project Manager, in the Agricultural and Biological Engineering Department at Purdue University for making it possible to provide Internet online access to these ARS Research “Stories” on the Transforming Drainage project website. This USDA-NIFA funded project is a regional effort of Purdue University, Iowa State University, North Carolina State University, North Dakota State University, South Dakota State University, The Ohio State University, University of Minnesota, University of Missouri, and USDA Agricultural Research Service.