Ronald E. Sneed

1973 - 74

Progress Report

WATER MANAGEMENT

As has been true for the past several years, the water management program in 1973-74 continued to be quite diverse, but major emphasis was placed on inter-departmental applied research programs, to trickle or drip irrigation, to land application by sprinkler irrigation of animal wastes, to the use of sprinkler irrigation for frost and freeze protection and to a study of agricultural water needs in North Carolina.

The water management specialist continues as a cooperator with the Department of Horticultural Science on a grape irrigation-cultural practices study, an apple irrigation-environmental control study, a greenhouse-vegetable study in which trickle or drip irrigation is one of the variables, and an apple irrigation-drip irrigation study.

During the past year considerable interest in using sprinkler irrigation for frost and freeze protection has developed among growers. The water management specialist has worked with several growers on the design and installation of sprinkler irrigation systems for this purpose. All should be in operation for the 1975 crop year. Also in the past year, several trickle irrigation systems for apples have been designed. Two of these systems were installed for the 1974 crop and others will be installed for the 1975 crop.

Data will be collected from the frost and freeze protection system and from the drip irrigation systems. Each of these systems has been installed in cooperation with Dr. C. Richard Unrath, Apple Physiologist in the Department of Horticultural Science. In addition to these farmer installed systems, a system for frost and freeze protection and crop cooling was installed on five varieties of apples in an orchard in Henderson County. From earlier work on using sprinkler irrigation for crop cooling a journal article, "Evaporative Cooling of Delicious Apples - Economic

Feasibility of Reducing Environmental Heat Stress," Journal of American Society of Horticultural Science, Vol. 94, No. 4, pp. 372-375, was authored by Unrath and Sneed.

Work also continued on land application of wastes using sprinkler irrigation. An automated permanent irrigation system was designed and installed on Kentucky 31 fescue grass at the Unit II Swine Facility to study the effect of swine lagoon effluent to the grass and also the runoff from a cecil clay soil. The Randleigh Dairy project which includes solid waste removal, multiple lagooning, land application through sprinklers, and reuse of waste water for floor flushing was completed and placed in operation. Two companies were assisted with rather extensive land application systems. Chick Sales, Inc. of Siler City, a new hatchery, and Nuway Packing Company of Forest City, a new slaughter house and packing plant for beef and pork, are installing waste management systems which include land application using sprinkler irrigation. This work was cooperative with the Office of Water and Air Resources and the Soil Conservation Service.

The Tenth Annual Conference of the North Carolina Irrigation Society, to which the water management specialist serves as technical advisor, was held in Raleigh in November 1973 with some 145 in attendance. The program theme was land application of waste. This meeting was attended by some 20 agricultural extension agents.

The North Carolina Land Improvement Contractors Association was formed in 1973. The water management specialist serves as technical advisor and Mr. J. C. Ferguson, retired Extension Biological and Agricultural Engineering Specialist, serves as executive secretary. These two people plus Dr. George Kriz were instrumental in the formation of this Association. The First Annual Conference was held in Raleigh during January 1974.

A project report covering Phases I and II of a study entitled "Agricultural Water Needs in North Carolina" was published in September 1973. Phase III of this study which is funded by the Office of Water Resources Research and the North Carolina Resources Research Institute is currently underway. This study, which combined

efforts of extension and research faculty, is designed to provide tools to predict agricultural water usage and also to determine optimum crop mix under a limited water availability regime. Two areas are being studied in Phase III. These are Wake County and the Tar-Neuse River Basins. This second area is cooperative with the Soil Conservation Service.