

1972 - 73

Progress Report

WATER MANAGEMENT

The water management program during 1972-73 was quite diversified; however, major effort has been devoted to interdepartmental applied research programs, to land disposal by sprinkler irrigation of animal wastes and to a study of agricultural water needs in North Carolina.

The water management specialist designed and installed an automated permanent irrigation system for a Land Spreading of Lagoon Effluent Project at the Swine Evaluation Center, Central Crops Research Station, Clayton, N. C. The purpose of this study is to determine the effects of various waste loading rates on the soil-crop system. This project is a joint effort of the Departments of Biological and Agricultural Engineering, Soil Science, Crop Science, and Animal Science. In addition to this study the water management specialist is serving as a team member of a group involved in a study of dairy waste disposal by land disposal through sprinkler irrigation at the Randleigh Dairy and of land disposal of sludge through sprinkler irrigation at the new City of Raleigh sewage treatment plant. The Randleigh Dairy project is a rather comprehensive study which includes solid waste removal, multiple lagooning, land disposal through sprinklers and reuse of waste water for floor flushing. In addition to these research projects, several swine producers have been assisted in irrigation system design for land disposal of swine lagoon waste.

The water management specialist continued as a cooperator with the Horticultural Science Department on a grape irrigation cultural practices study, a horticultural crops irrigation-environmental control study, an apple irrigation-environmental control study, a container grown nursery stock irrigation and environmental control study, a greenhouse tomato trickle irrigation study, and an apple irrigation trickle irrigation study. In addition, a large grape grower was provided assistance on the

design of a 25-acre trickle irrigation system. An apple grower was assisted in the design and installation of a 10-acre automated permanent irrigation system that includes frost and freeze protection, crop cooling and irrigation.

Phase II of a study entitled "Agricultural Water Needs in North Carolina" was completed, and the project report covering Phases I and II will be available in early September. Phase III of the study was funded by the Office of Water Resources Research and the North Carolina Water Resources Research Institute. This study is designed to provide tools to predict agricultural usage and also to determine optimum crop mix under a limited water availability regime. Pitt County, North Carolina, was selected as the study area for a data base for Phases I and II. Most of the methodology was completed in Phases I and II, and Phase III will involve testing of the methodology on other areas of the state. The water management specialist is one of the co-investigators.

The water management specialist participated in nursery field days at Asheville, Salisbury, Charlotte, Pineville and Bailey. Irrigation system design, crop cooling, frost and freeze protection, and trickle irrigation were discussed at these meetings. A number of growers were assisted with irrigation system designs for nursery crops, peaches, strawberries, pick-your-own vegetables and tobacco. An apple processing plant was assisted with a design for an irrigation system for land disposal of the processing wastes from the plant.

The North Carolina Forest Service was assisted in the design of irrigation systems for their seed production orchards, and the Caledonia Prison Farm was assisted with an irrigation system design.

The Ninth Annual Conference of the North Carolina Irrigation Society, to which the water management specialist serves as technical advisor, was held in Asheville in November 1972 with approximately 60 in attendance. The program theme was irrigation equipment multiple use, and turf and lawn irrigation.

Committees Served On

R. E. Sneed

1. ASAE - Soil and Water Division Steering Committee (SW-02).
2. ASAE - Irrigation Group (Vice-Chairman) (SW-24).
3. North Carolina Agricultural Extension Service Ornamentals and Turf Commodity Coordinating Committee.
4. North Carolina Agricultural Extension Service Tree Fruits Commodity Coordinating Committee.
5. North Carolina Agricultural Extension Service Small Fruits Commodity Coordinating Committee.
6. North Carolina Agricultural Extension Service Vegetable Crops Commodity Coordinating Committee.
7. North Carolina Agricultural Research Station Research Task Force I Committee (Soil, Water and Forest Resources Inventory).
8. Executive Committee, North Carolina Alpha Zeta Alumni Association (President).
9. Irrigation Procedures Committee for Horticultural Crops Research Station, Clinton, N. C. (Secretary).
10. Public Relations Committee, Soil Science Society of North Carolina.
11. Cooperative Greenhouse Committee, Horticultural Crops Research Station, Clinton, N. C.
12. Swine Subcommittee of SALS Animal Waste Disposal Committee.
13. 1973 Fletcher Field Day Committee.
14. Technical Advisor, Awards, Technical Standards and Program Committees, North Carolina Irrigation Society.

Meetings Attended and Papers Presented

R. E. Sneed

1. 1972 Southeastern Electric Exchange Marketing Conference, Williamsburg, Virginia, November 9-10, 1972. Presented paper entitled "The Potential for Irrigation in the Southeast".
2. Ninth Annual Conference of North Carolina Irrigation Society, Asheville, N. C., November 29, 30, 1972. Presented paper entitled "The Economics of a Total Irrigation System".
3. Winter Meeting of American Society of Agricultural Engineers, Chicago, Illinois, December 12-15, 1972. Tri-author of paper entitled "Water Requirements for Optimum Crop Yields" which was presented at meeting.
4. Trellised Tomato Demonstration and Research Review, Asheville, N. C., January 3, 1973. Presented talk entitled "Trickle Tube Irrigation".
5. 1973 Annual Meeting of the North Carolina Peach Growers' Association, Southern Pines, N. C., January 23, 1973. Presented talk entitled "Trickle Irrigation".
6. Soil Conservation Service Engineering Workshop, Raleigh, N. C., January 24, 1973. Presented talk entitled "New Trends in Irrigation".
7. Clayton Rotary Club, Clayton, N. C., January 25, 1972. Presented talk entitled "Irrigation in North Carolina".
8. Fourteenth Annual Virginia-Carolinas Fruit School, Mount Airy, N. C., January 26, 1973. Presented talk entitled "What I Should Know to Consider Trickle Irrigation".
9. Modern Farming Short Course, Raleigh, N. C., February 5, 1973. Presented talk entitled "Water Management".
10. Quarterly Annual Conference of Carolina Power & Light Company Agricultural Development Engineers, Florence, S. C., February 21, 1973. Presented talk entitled "Standards for Solid-set and Permanent Irrigation Systems".
11. Second Annual Meeting, North Carolina Farm Markets, Inc., Raleigh, N. C., February 22, 1973. Presented talk entitled "Irrigation System Design and Use".

Other Activities

R. E. Sneed

1. Two magazine articles:
 - a. Sneed, R. E. Overcome yield barrier, irrigate. The Peanut Farmer. May 1973. 9(5):14-15
 - b. Kriz, G. J., L. D. Hunnings, R. E. Sneed, S. F. Shih. Land forming design for water management. Journal of Soil and Water Conservation. May-June 1973. 28(3):134-136
2. Taught three-hour course entitled "Irrigation, Terracing and Erosion Control" to 32 students in Spring 1973 in Biological and Agricultural Engineering Department.
3. Served as chairman of or a member of review committee for three departmental papers, two ASCE papers, and one ASAE paper.
4. Served as advisor to Senior Honors student.
5. Served as advisor to TBE students.
6. Prepared mimeographed material on the following subjects:
 - a. Trickle Irrigation.
 - b. Irrigation Pumps and Power Units.
 - c. Hydraulics of Sprinkler Irrigation Systems.
 - d. Pipe for Irrigation.
 - e. Types of Irrigation Systems.
 - f. Types of Sprinklers, Their Patterns, Spacing and Selection.
 - g. Quality of Water for Irrigation.
 - h. Crop Response to and Economics of Irrigation.
7. Assisted in State FFA Demonstration Contest, June 1973.
8. Served as consultant to John Harris, Landscape Architect, Lexington Swine Breeders, Greek Tobacco Company of Uruguay.