LAND FORMING PROGRESS REPORT FOR FY 1969-70

For many years it has been recognized that for Coastal Plain farmers to obtain maximum production, extensive water management practices must be utilized. This includes both drainage to remove excessive rainfall and irrigation when rainfall is insufficient. Drainage programs have been in progress for many years with the Agricultural Extension Service providing the educational assistance and the Soil Conservation Service providing the technical assistance. The Agricultural Extension Service has promoted irrigation and provided information through a very active program for the past two decades.

In recent years, however, it has been recognized that often these programs were not coordinated and often did not complement each other in a total program. Drainage was recognized as being needed during periods of excessive rainfall and irrigation during periods of deficit rainfall. Drainage was accomplished primarily by tile and open ditches. Irrigation was primarily overhead sprinkler.

In late 1968 it was decided that possibly a program in land forming might be a method of tying the irrigation and drainage programs together and at the same time acquire much needed field data on land forming. As the name implies, land forming is the shaping of a field to a uniform or non-uniform row and cross row slope to remove shallow field depressions and to facilitate the rapid removal of excess surface water to prevent crop damage and at the same time slowly enough to allow adequate infiltration of water into the soil.

The land forming program is a cooperative program involving the Agricultural Extension Service, the Soil Conservation Service, the Biological and Agricultural Engineering and Soil Science Departments at North Carolina State University, the Agricultural Research Service, and Reynolds Research and Manufacturing Company of McAllen, Texas, who is furnishing pans and a land plane for the demonstrations.

In 1968 five field demonstrations were conducted. In 1969, seventeen were conducted, ~~with~~ five demonstrations being held in the first half of 1970 and five more are being scheduled

during the remainder of 1970. These 32 demonstrations have involved 29 Coastal Plains counties from the northeast to the Sandhills, with 545 acres being land formed. A total of 12 demonstrations were conducted during FY 1969-70. In each of these demonstrations a field was selected by the county extension agent, the Soil Conservation Service district conservationist, and a representative from the Department of Biological & Agricultural Engineering. The field surveys were done by representatives of the same three gro.ups. The design was completed by a staff member in the Biological and Agricultural Engineering Department. Tractors were furnished by the farmers or by local equipment dealers, and the tractor operator was a technician employed by the Biological and Agricultural Engineering Department.

Along with the field demonstrations, the Soil Science Department has been conducting yield response versus fertility studies on several different soil types. These have involved both field studies and greenhouse experiments. It is expected that these studies will continue for several years.

In addition to the demonstrations and the fertility experiments, a mimeographed handout has been prepared, four TV shows have been given, papers on land forming were presented at the National Plant Food Institute Annual Meeting in October 1969, and the Southeast Section of the American Society of Agricultural Engineers meeting in February 1970. Land forming was one of the topics discussed at the agent training school on organic soils held at Plymouth in February 1970. One magazine article has been prepared, and several newspaper articles have been written. Concurrent with the field studies, a research associate in the Biological and Agricultural Engineering Department has been working to develop a suitable computer program for land forming. Work on this project is still continuing; however three papers have been prepared from this work; a new method of design has been developed; and a new method of determining cuts and fills has been developed. Both regular and irregular shaped fields can be designed using these programs.

Interest in land forming is increasing throughout the Coastal Plains. Approximately 15 farm equipment dealers are now selling land forming equipment, and several have rental equipment available. Individual landowners have purchased at least 30 pans and 25 land planes. Land forming contractors are located in Edgecombe, Columbus, Gates, Sampson, and Halifax Counties. Other contractors have expressed interest in land forming. It is estimated that approximately 2000 acres of land has been formed to date, and by 1971 that figure should double.

A plan has been prepared for an entire farm in Jones County consisting of 150 acres, and the field work should be completed in 1970. More than 200 acres have been approved for ACP cost sharing in Columbus County. Most of the 40 Coastal Plains counties have ACP cost sharing for land forming included in their 1970 program.

Most of the land forming to date has been designed for drainage; however there is interest in land forming for surface and sub-surface irrigation. Evaluation of the land forming program has begun and will continue for the next three to five years.