Agri. Expt. Station Project No. 786
SCS Project No. B-1-2-3

WORK PLAN

TITLE: Farm tests on contouring corn, soybeans, and small grain in relation to runoff, erosion, and yield.

LOCATION: The county, soil type, and number of fields for contour studies in 1943 are as follows:

County	Soil Type	Number Fields
CORN		
Winneshiek	Fayette silt loam	6
Allamakee	" " "	6
Clayton	Tama silt loam	6
Tama	" " "	6
Linn	Carrington loam	6
Black Hawk	" "	3
Marion	Haig silt loam	6
Jefferson	" " "	6
Adair	Shelby loam	6
Decatur	" "	6
Harrison	Knox silt loam	6
Audubon	Marshall silt loam	6
SOYBEANS		
Jasper	Tama silt loam	6
Mahaska	" " "	6
Black Hawk	Carrington loam	6
Linn	" "	3
Van Buren	Haig silt loam	6
Lucas	" " "	6

PROCEDURE: A minimum of twelve farms will be located for each crop on a particular soil type. In order to divide the work load, six fields will be located in each of two districts or counties. Contoured and up-and-down hill areas will be located at each end of the field wherever possible. This will be considered as replication within the field and not as two separate fields. Farmers with cooperative agreements will probably be the most satisfactory. Farmers that are planning contouring for the first time and who may have some question as to the beneficial effects of the practice will also be suitable. If cooperators are not available, other interested farmers will be selected. The fields selected in each county should be uniform with respect to soil, slope, and erosion in order that factors other than direction of rows will be eliminated and the results will be directly comparable.

The slope should be as uniform as practicable and the average slope of the cropland for that particular soil type. The following slopes are suggested as a guide:

Soil Type	Percent Slope
Fayette silt loam	12
Tama silt loam	6
Carrington loam	6
Haig silt loam	6
Shelby loam	9
Marshall silt loam	9
Knox silt loam	15

It is believed that these slopes will be near the average for land in corn and oats but may be somewhat high for soybeans, since there has been so much emphasis placed on keeping beans on the more level areas. Certainly the farmer should not be encouraged to plant beans on land steeper than he planned originally just for the purpose of this study. If it is impossible to locate six farmers who are planning to put soybeans on the land of the percent slope suggested, go to the less steep slopes to the extent necessary to get the number of farms required.

The representatives in the counties will locate farmers willing to cooperate in these tests. A representative of the Agricultural Experiment Station or the Division of Research, SCS, will visit the county before planting time and go over each field with the technicians to determine its suitability for the test. This procedure is different than last year but will eliminate the unsuitable fields before the tests are started instead of later in the season.

The farmer will be given assistance at planting time wherever possible in order to be sure that all operations and rate of planting are the same on both the contoured and up-and-down hill area. This is particularly important since in 1942 some fields were found to have a different stand on the contoured and up-and-down hill areas. While in most cases the difference in stand could be explained as being due to treatment, there were certain instances where there was rather definite evidence that the rate of planting had not been the same on both areas.

The areas will also be visited once or twice during the growing season to observe soil losses; to make stand counts; to locate and stake sampling sites from which yields will be taken in the fall; and to take soil samples for moisture determination from selected fields as time and facilities will permit. Samples for yield will be taken in the fall and arrangements will be made for moisture determination and for threshing at either Clarinda or Ames.

If fields are relocated each year, the effect of contouring will be limited to that particular year with no carry-over effect from year to year, which is a very important consideration. Therefore, wherever possible, the plots started in 1942 will be continued on the same fields in 1943 and subsequent years and yields taken from each crop in the rotation. This will represent a large saving in time, since it will not be

necessary to relocate the sampling areas and the farmer will be familiar with the procedure.

The farmers should be encouraged to make regular inspections of the areas after each rain to observe soil and water losses. He should also be encouraged to ask his neighbors to his place and have them make similar observations. Field trips planned for groups of farmers might also be feasible. News releases by local papers, with photographs, if available, and names of farmers should also help create interest. Soil and water losses cannot be estimated with any satisfactory degree of accuracy. However, there are times when relative amounts of soil loss can be determined from number and depth of gullies, silt bars in grassed waterways or other places of accumulation. The amount of breaking over in the contoured rows and the scouring in the rows planted up-and-down hill are observations that could be made to evaluate the effectiveness of the practice in conserving soil.

Two sheets are enclosed that should be helpful in tabulating pertinent information to be used in interpreting the data. A complete record of frequent observations by farmer, technician, county extension director, and others, together with pictures taken, would be very helpful in summarizing the data and preparing reports on the studies.

The details for locating the areas, methods of seeding and harvesting are as follows:

Oats: No new locations will be made for oats in 1943, but wherever possible the areas that were in corn or soybeans in 1942, which are to be seeded to oats this year, will be used to compare contouring and up-and-down hill seedings. Stake off the area that was farmed up-and-down hill in 1942. All operations on these areas will be up-and-down hill, except broadcasting the oats, which will be in one direction to prevent double seeding of the areas where the contoured and up-and-down hill areas come together. The remainder of the field will have exactly the same treatment but all operations will be on the contour. Past experience has shown that it is particularly important to have all operations the same if the results are to be of most value. The up-and-down hill area will be harvested for yield by discarding a strip 30 feet wide next to the contoured portion that may have been damaged by turning and also a 35-foot strip next to the fence to reduce fertility differentials that may occur along the fence row. Discarding a 35-foot strip next to the fence will also help eliminate damage from insects and hot winds. From the remaining 15 feet, 5 composite samples will be taken, each consisting of 4 randomized samples. The heads of the grain from each sample will be placed in a #20 paper bag, tied, and taken to Ames or Clarinda where small machines are available for threshing the grain. A rectangular frame 3 x 3 feet with one open side will be used in taking the samples. In areas where seeding is made with a grain drill, a given number of rows will be harvested. The same procedure will be followed on the contoured area, allowing a strip 30 feet wide adjoining the up-and-down hill portion.

Corn: The field will be planted on the contour, leaving a strip at each end of the field wide enough for 24 rows of corn. These areas

will be planted up-and-down hill. Observations of growth and soil and water losses will be made from time to time throughout the growing season, and yields will be taken in the fall from contoured and adjacent up-and-down hill plots at 7 randomized locations on the slope at both ends of the field. Procedure for sampling will be changed somewhat from last year and the details will be worked out before harvest time.

Soybeans: The field will be planted on the contour, leaving a strip 80 feet wide at each end of the field. These areas will be planted up-and-down hill. Observations of growth and soil and water losses will be made from time to time throughout the growing season, and yields will be taken in the fall from contoured and adjacent up-and-down hill plots at 5 locations on the slope at both ends of the field.

Each composite sample will consist of 4 randomized samples of two adjacent rows, each exactly 2 feet long. (A measuring stick exactly 2 feet long with arms at the ends 8 or 12 inches long will be used to make sure that only 2 feet of row are harvested. This measuring stick will be placed in the row and all the plants within the arms should be harvested.) Each composite sample will represent an equivalent of a 16-foot row. Measurements will be made and records kept on the field sheet of the distance between 11 rows which will represent 10 middles. Dividing this distance by 10 will give the average spacing of the rows.

The beans will be harvested by cutting the entire plant or by stripping the beans from the plants as they stand in the field. In the former case, the beans should be cut when the leaves have dropped and about one-half of the pods have turned brown. At this time the beans are very resistant to shattering and can be tied in bundles representing the 16-foot row length, consisting of the 4 individual samples, and transported to Ames for threshing. If the stripping is attempted, the beans should be somewhat more mature. Each method has certain advantages but, based on the experience of different individuals, the method of cutting the entire plant is recommended. In 1942 the soybeans were pulled. The soil remaining on the roots caused a great deal of difficulty at threshing time. Pulling the soybeans is very rapid and if the roots are cut off before threshing or the dirt removed by washing with water no difficulty will be encountered.

RESPONSIBILITIES OF EACH AGENCY:

1. Since the field tests are basically research, the Iowa Agricultural Experiment Station and the Division of Research, Soil Conservation Service, will assume leadership in the work and will be responsible for the experimental procedure and the measurement and interpretation of results.

2. The Extension Service will be responsible for leadership in the educational phases of the work and will also assist in the location of farms, in conducting the studies, in evaluating the results, and in projecting findings through informational and demonstrational processes.

3. The Operations Division of the Soil Conservation Service, as a part of their direct service to Districts and farmers in developing soil conservation plans, will assist in the location of farms, in conducting the tests, and in evaluating the results as an aid in developing the local or district program.

TECHNICAL LEADERS AND PERSONNEL:

G. M. Browning, Division of Research, Soil Conservation Service

J. B. Peterson, Soils Subsection, Iowa Agricultural Experiment Station

M. B. Russell, Soils Subsection, Iowa Agricultural Experiment Station

Representatives of the Operations Division of the Soil Conservation Service and Extension Service

District Commissioners

SIGNED:

IOWA AGRICULTURAL EXPERIMENT STATION

/s/ R. E. Buchanan DATE March 17, 1943

IOWA EXTENSION SERVICE

/s/ R. K. Bliss DATE March 18, 1943

/s/ R. W. Oberlin DATE March 22, 1943
State Conservationist