

AGRICULTURAL RESOURCES CONSERVATION PROGRAM

County Des Moines

State Iowa

I. General

1. Statement of Objectives

The basic objective is best reflected in Secretary Brannan's Statement:

"The basic physical objective of soil conservation activities by Department agencies shall be the use of each acre of agricultural land within its capabilities and the treatment of each acre of agricultural land in accordance with its needs for protection and improvement."

The local objective is to get all farm owners and operators in Des Moines County to accept this as a long time goal for their guidance in the use of their land.

It is proposed to make a careful study of the local situation to determine the overall situation, the relative seriousness of various conservation problems, what can be done about them, who is best fitted to help with them and how best to go about a sound land use program for the area.

2. Organization

The Agricultural Resources Conservation Committee is composed of representatives of those groups in the county who have been designated to assist in formulating and carrying out a sound land use and conservation program. Their authorities and responsibilities have been generally set forth by Congress and the State Legislature with considerable latitude for local determination of policies and methods.

Participating Agencies

<u>Agencies</u>	<u>Representatives</u>	<u>Titles</u>
Extension Service	James Hodges	Extension Director
	Julia Metier	Home Economist
Soil Conservation Service	F. S. Yetter	Conservationist
	R. H. Audsley	Conservationist
Production and Marketing Administration	Geo. H. Eversman	Co. Chairman
	Dale W. Tucker	Co. Committeeman
	Albert J. Schulz	Co. Committeeman
	Rudolph O. Lucas	Community Committeeman
	Milton H. Distelhorst	Community Committeeman
	Arne F. Nielson	Community Committeeman
	Alonzo V. Brandmeyer	Community Committeeman
Des Moines County Soil Conservation District	Hugh Jamison	Commissioner
	Kenneth Redfern	Commissioner
	Howard Gieselman	Commissioner

3. General Description

- a. The area of the county is approximately 261,760 acres of which 19,000 acres are held by the government in the Iowa Ordnance Plant. Of this 19,000 acres 4500 acres are in cropland and 7915 acres are pasture land.

There are 236,430 acres classified as farmland other than the land in the Ordnance Area. Of this amount 146,470 acres are cropland and 61,469 acres non-crop open pasture land.

- b. The soils vary widely within the county - upland soils include prairie type formerly known as Grundy and Tama but now classified under the name Mahaska. Upland soils also include those formed under timber conditions which are mostly classified as Clinton and Lindley. About 45,000 acres of bottom land soils are to be found adjacent to the Mississippi and adjacent to the larger inland streams.

It is estimated that approximately 45% of the county can be considered as Class I and Class II land, 20% as Class III and the balance as land generally not suited for cultivation. Not all the Class I, II, and III land can be farmed as parts of it are odd areas or isolated by less suitable land. The general distribution of farmable land is estimated as follows:

Class I and II	100,000 Acres
Class III	51,000 "
*Permanent Pasture	62,000 "
Buildings, Roads, Lots	28,000 "
Total	241,000 "

*Some of the land designated as permanent pasture falls in Classes I, II, and III, some of which could very well be brought under cultivation. There are also areas being cultivated that should be retired to pasture.

The major soil types are:

Mahaska - Taintor - Otley	43%
Clinton - Lindley	35%
Wabash	14%

- c. The average annual temperature for the county is - High 61 degrees and low 40.4 degrees. Average annual rainfall is 36.18 inches. The average annual killing frosts are April 20 and October 18. The highest temperature reading during the years 1942 to 1950 was 111 degrees and the lowest -27. The earliest killing frost on record in the county was September 22, 1915, and the latest was May 25, 1925.
- d. The population in the county is approximately 40,000 with 3500 people living on the farms and 36,500 in Burlington and surrounding towns.

- c. The average sized farm in Des Moines County is 152 acres. There are approximately 1521 farm in the county.

Trends in land use:

1. More meadows in rotation
2. More legume seedings with less small grain not seeded.
3. Greater use of grasses seeded with legumes, with bromo. grass taking on increasing importance.
4. Better meadows through use of limestone, fertilizers, and seeding methods.
5. More acres of permanent pasture are being renovated.
6. More rough land being taken out of production and retired to permanent pasture, also some plowing up of the more level permanent pastures.
7. More water courses are given over to grass and meadow production.
8. More livestock, particularly hogs, moved on to legume pastures.
9. As pastures and meadows are increased and the qualities improve, more of the last cuttings are not made but are plowed under to increase organic content of the soil.

Cattle numbers have remained fairly steady with a slight decrease in dairying and a corresponding increase in beef production. Production of hogs varies in relation to food supplies.

Principal farm products ranged in order of value in the county are: hogs, beef, grain, dairy products, poultry and sheep.

II. Agricultural Resources Conservation Problems

1. Considerable land in the county is being cropped too intensively.
2. Erosion by water is serious in Des Moines County. Some erosion occurs on all sloping land but is more extensive on steeper slopes, particularly on Clinton soil.
3. Although most of the necessary drainage work has been done in the county, numerous wet spots need attention. In some instances the existing tile and ditches have fallen into disrepair, in others the systems were not adequate when installed. In several areas runoff of hill water rushes down on the more level bottom lands causing flooding and deposition of debris on valuable crop land.
4. On many farms the rotation does not include sufficient seeding of grasses and legumes, and on some farms the farmers still burn the corn stalks, bean straw and other residue. Long years of cropping and grazing without the proper use of barnyard manure and commercial fertilizers, and lack of plowing under green manure crops and residue have lowered the fertility and taken the organic matter out of the soil on these farms.

5. Many pastures are overgrazed; on others hogs root up grasses on slopes and sod waterways; and others have nitrogen-starved bluegrass on which weeds are presenting a problem.
6. A very small percent of the land in Des Moines County is in woodland and this woodland is being poorly cared for.
7. There are some noxious weeds in the county and there is a definite need for more eradication of weeds in general.

III. Applicable Measures and Practices Needed to Solve Problems

1. Many farmers could increase their total production measured in bushels and tons by adopting a less intensive rotation and the right use of legumes, grasses, limestone and fertilizers. At the same time they could bring about improvement within the soil that would insure high yields for indefinite periods. The land on each farm needs to be studied and classified according to its capabilities and its needs, and the rotations selected and treatments used that will give the greatest yields over a long period.

For most of the Class I and II land a rotation of two years of row crops, one year small grain and two years of good grass-legume meadow should be followed. With this rotation an organic content of the soil is maintained, the texture is improved and the fertility level is raised with resulting increase in production per acre.

On Class I and Class II land which is high in organic content a rotation such as two years of row crops, small grain seeded to a legume and one year of hay or pasture is usually satisfactory.

On Class III land the general rotation recommended is corn, oats, and two years of good grass-legume meadow. In some cases a rotation which includes one third corn may be used. If soybeans are used instead of corn they should be carefully contoured to prevent serious erosion losses.

Variations may be made in rotations to fit the particular situation, however, the intensity should be based upon the potential capability of the land and the additional treatments that will be applied.

Land classified as Class IV should be put in a long rotation. Class VI land should be maintained in vegetation and only broken out for reseeding to improve the quality of the pasture.

2. For the sloping parts of Class II land simple practices such as contouring and good grassed water courses are usually sufficient. On long slopes terraces are desirable. Most of the sloping Class III land requires contouring. Where the slopes are steep or so badly cut up that contouring becomes a problem it is sometimes better to use a less intensive rotation and farm across the slopes. On many fields just below the break between the more level and the steeper portions, a single terrace will divert runoff from the steeper areas and also furnish a guide to contouring.

Where gullies have formed they should be plowed in to form a wide, dish-shaped cross section, a sod established and the area left as a grassed waterway. In cases where sod is not sufficient an erosion control dam will be required.

Selection of the proper rotation for a field is an important factor in erosion control. Grass roots hold the soil particles in place, and a growing crop prevents rain drop splash. If erosion is to be kept at a minimum, the cropping program must include a supply of roots and an abundance of cover. When an erosive area is given the protection of contouring and terracing, it is usually possible to use a more intensive rotation.

3. The proper design and installation of any drainage system is necessary for the most economical construction and the best results.

A diversion terrace at the foot of the slope may help to retard the runoff of hill water on to more level lands. For the larger streams detention reservoirs and dams may prove economically sound.

4. Seeding of legumes and grasses in all small grain, using limestone and fertilizer according to soil tests, as well as the plowing under of crop residue will increase fertility and prevent soil condition problems.
5. Controlled grazing, use of limestone and fertilizers, and breaking up and reseeding pastures with a mixture of legumes wherever possible will greatly increase the grazing capacity of the land as well as increase the feeding value.
6. An educational program on the better care of woodland and value of planting windbreaks on many farms is needed.
7. A program which would require farmers to keep woods mowed in fence rows along highways and on pastures would help solve the weed problem in the county.

IV. Progress Made to Date in Meeting Agricultural Resources Conservation Problems

1. Statistical Report

Accomplishments showing trend (From PMA Records)

<u>Practice</u>	<u>Year</u>	<u>Amount</u>	<u>Year</u>	<u>Amount</u>
Limestone	1940	11,000 T.	1950	38,322 T.
20% Equivalent Phosphate	1940	8 T.	1950	2,507 T.
Contouring	1940	0	1950	2,987 A.
Open Farm Ditches	1940	0	1950	25,582 Cu.Yd.
Pasture Seeding	1940	142 A.	1950	438 A.

Accomplishment to Date

<u>Practice</u>	<u>Amount</u>
Limestone	350,000 Tons
Phosphate, 20% Equivalent	8,787 Tons
Contouring	7,893 Acres
Sod Waterways	178 Acres
Dams for Erosion Control	20,842 Cu.Yd.
Terraces	45 Miles
Tiling	30,000 Rods
Strip Cropping	200 Acres
Pasture Renovation	705 Acres
Ponds and Structures	35

2. Narrative Statement

a. Extension Service Report

In 1932 the County Agent was testing soils to determine the need for limestone. As many as 183 farms were tested for limestone for the next five years. There was one demonstration farm in each township on terracing and tree planting as erosion control measures. In addition, many new varieties of alfalfa and clover were made available to the farmers. Lespedeza was made available to a few farms in the county as a part of the pasture improvement program. In 1936 soil erosion dams were built on three farms. In 1936-37 some Des Moines County farmers in cooperation with the County Agent and Iowa State College wrote the little bulletin, "Plan to Use That Soil and Keep It Too."

During the years the Extension Program's part has been to cooperate in an educational program with the established agencies such as Soil Conservation Service and the PMA. In addition the Extension Service acted as a media of education to such emergency agencies as the WPA. They assisted in the educational program at a camp which was located at Oakville. This camp did most of its work on drainage. A small amount of dam and terrace building was done. From 1941 on through to the present time, the Extension Service assisted the agencies in setting up tours, putting out test plots of alfalfa, new grasses, and new corn and oat varieties.

In 1944-5 work was started in the county which resulted in the establishment of a Soils District. Soils commissioners were chosen, and with this organization, the Soils Service began to expand its activities.

The Extension Program helped set up demonstration farms and in 1947, a demonstration program was set up on three adjoining farms in the county. Extension Service has assisted in getting farmers together for the purpose of establishing planning groups. It has worked diligently with any agency to carry on an educational program. The support and enthusiasm of the Chamber of Commerce, Rotary and Kiwanis groups, and other business men's organizations has been solicited. Today this cooperation shows itself in the 10 acre corn yield contest, in sponsoring tours and in other educational programs. At the present time, Extension has in its county-wide program, these goals:

1. One hundred bushels of corn to the acre by 1965. (This includes the use of every known good farming practice)
2. Control of the Flint Creek Flooding area.

b. PMA Narrative

The Soil Conservation and Domestic Allotment Act of 1936 authorized annual payments to farmers for carrying out specific soil building practices. The conservation payments are intended to defray in part the cost of these practices and are paid to the farmers for doing things in the national interest.

Each year since that time the elected community committeemen have contacted the farmers in the county discussing the visible crop needs and soil conservation practices suitable to each individual farm.

During the years 1936 through 1941 farmers were requested to voluntarily increase the acreage of soil conserving crops and decrease the acreage of depleting crops. At the beginning of the program a very small acreage in the county had been lined and the obtaining of a stand of clover was dependent on weather conditions while the alfalfa acreage was negligible. With the steady increase in the use of limestone through the program years, failure in clover seedings lessened and acreages of alfalfa considerably increased.

With the present need for all-out production, emphasis is made on maintaining good farming practices through better systems of crop rotation, by increasing the yields per acre rather than more extensive farming. Higher yields can be accomplished by planting more intertilled crops on the contour, the establishing of more sod waterways, building of additional terraces, better drainage systems through tiling and open farm drainage ditches, dams for erosion control and livestock water, and the use of limestone and fertilizer where needed. Renovation of permanent pasture has shown a gradual increase during the last few years.

c. District and SCS Narrative

Since the establishment of the Soil Conservation District in 1946, the Soil Conservation Service has assigned technicians and aids to help farmers with their conservation problems. This has covered many fields including soils engineering, biology, agronomy, forestry, farm planning, etc. The major emphasis has been in assisting farmers to develop sound conservation programs on their farms and helping them to get conservation measures applied to the land. About 210 active plans are in operation on 35,000 acres of land. The layout accomplished is included in the totals shown elsewhere in this report.

The Soil Conservation District has been stimulating interest in conservation in numerous ways. This includes tours, demonstrations, community meetings, contests, training schools, town meetings, etc., for the general public and for special groups. The District has had as a major objective since it was established the use of each acre according to its capabilities and its treatment according to its needs.

V. Facilities

1. The Soil Conservation District was established within the county to stimulate interest in a soil conservation program and help in getting sound conservation measures applied to the land. The District has arranged for and obtained technical help for farmers through the Soil Conservation Service. This covers many fields including agronomy, soils engineering, farm management, biology, forestry, erosion control, etc.

The District also has at its disposal limited funds for the employment of semi-skilled help for staking, layout and supervision of practices.

2. The Soil Conservation Service, working with the Des Moines County Soil Conservation District can provide a variety of technical skills in the planning and application of conservation measures.
3. In carrying out the Agricultural Resources Program in the county, the Extension Service has at its disposal volunteer leadership in addition to the trained personnel, namely, the County Extension Director and County Extension Home Economist. There are 26 4-H Clubs with leaders who could carry out educational programs to their club members. They also have a Program Planning Committee that meets periodically to discuss and plan programs of work to be carried out in the county. The women are organized in township groups and the Home Economist contacts these groups with extension lessons each month.

The Extension Service has contact with various livestock, Dairy Herd Improvement Association and Seed Distribution Committees and organizations.

The Extension works under a cooperative agreement between the County Farm Bureau and Iowa State College. The Farm Bureau Board is the administrative board in the county. There is one board member for each of the townships. Several of the townships meet regularly and educational material can be distributed at these meetings. The County Board of Supervisors appropriate funds in addition to the County Farm Bureau and Iowa State College to carry out the Extension Educational Program.

4. PMA facilities include the County and Community Committeemen who are elected by farmers in their own communities and who contact all farmers in the county discussing soil conservation plans and crop rotation in order to promote conservation of our soil and increase production. The County and Community Committeemen also administer the ACP Program and determine the eligibility of farmers for incentive payments from funds appropriated by Congress each year to defray part of the cost of carrying out the various conservation practices.

PMA Program men, who may be community committeemen, take soil samples to determine limestone and fertilizer needs, lay out contour lines and aid with other conservation practices where the assistance of a soil technician is not required.

PMA County and Community Committeemen also administer the Commodity Loan Programs which make loans available to farmers. These loans assure farmers the support prices for commodities and save them from losses incurred when forced to sell their grain on a depressed market.

Federal Crop Insurance programs are being carried out by County and Community Committeemen in a number of counties in Iowa.

VI. Conservation Goals

The Committee has selected the following as goals:

1. The best use of public funds to obtain the most conservation
2. The best use of the employees of the Department and other agencies or groups to assist farmers in getting sound conservation applied to their farms.
3. A well informed and active leadership to stimulate interest and assist in getting conservation on the land.
4. A well informed group of farmers on the conservation problems and needs, the methods of solutions and the facilities at their disposal.
5. A better informed general public on the relationships of conservation to their everyday life and the future of the nation.
6. Some type of information such as capability map for every farm in the county to be used by all departmental employees in meeting the basic objective.
7. A conservation program on each farm in line with the farmers particular enterprise which will include the best rotation of crops, the necessary erosion control measures, and the other things desirable to build up and maintain a high level of fertility.

Work plans and methods have been developed for some of these. For the others committees have been set up to give further study and make a report to the Agricultural Resources Conservation Service Committee.

Coordination of Activities -- Conservation Practices and Methods (Goal 2)

GENERAL:

This is a plan for coordinating the planning and application of conservation measures under the Agricultural Conservation Program administered by PMA.

The purpose of this plan is to establish in advance for the guidance of all persons affected the methods and techniques whereby the best use can be made of all available facilities in getting the most conservation on the land under the AC Program.

1. STANDARD TERRACES

Community committeemen will determine at time of sign-up the approximate season when the work is to be done and explain to the farmer his responsibility to notify the County Office two weeks before he plans to start the project.

Determination of need, staking, supervision and checking will be handled by the SCS technician or under his supervision by others assigned to assist him.

DIVERSION TERRACES

DAMS AND RESERVOIRS FOR LIVESTOCK WATER

EROSION CONTROL DAMS

For construction of diversion terraces, dams and reservoirs for livestock water and erosion control structures, a method similar to that of terracing will be followed.

2. CONTOURING INTERTILLED CROPS

At the time of sign up the community committeemen will determine if guide lines are already available or can be supplied by the farmer himself. If guide lines will be needed he will explain to the farmer his responsibility to notify the county office at least a week before he plans to start the project.

General determination of need can be made by SCS without a visit to the farm by reference to soils maps and aerial photos.

PMA committeemen or program men will assume responsibility for laying out guide lines except that in difficult situations they may request help from SCS technicians.

Checking of compliance will be the responsibility of community committeemen except where SCS technician through his usual contacts has adequate knowledge upon which to make certification.

CONTOUR STRIP CROPPING

GRASS HEADLAND WATERWAYS

SOD WATERWAYS AND TERRACE OUTLETS

ESTABLISHING AND IMPROVING PERMANENT PASTURE

OPEN FARM DRAINAGE DITCHES

For contour strip cropping, grass headland, pasture renovation and for open drainage ditches, sod waterways and terraco outlets that do not require heavy excavation, a method similar to contouring will be followed. Open drainage ditches, waterways and terrace outlets that require surveys, complex designs, movement of large quantities of earth or heavy construction will be referred to and handled by the SCS technician in a manner similar to that of terracing.

3. TILE DRAINAGE

The community committeeman will determine at the time of the sign up the approximate time the work will be done. He will also question the farmer relative to the nature of the proposed job and furnish to the county committee sufficient explanatory information so they can determine the difficulty and complexity of the job.

The committeeman will explain to the farmer his responsibility to notify the county office at least two weeks before he plans to start the project. He is also to be informed that all tile lines must be left open a reasonable time for inspection and that failure to give adequate notice will result in disapproval of the uninspected portions.

When notice of approval is sent to the farmer it will be accompanied by a set of tile specifications and a statement of the requirements mentioned above.

Layout and supervision of tile jobs will be assigned to trained program men who will handle all except the bigger and more difficult jobs. As a general rule if the grade line is flatter than 6 inches per 100 feet, it should be referred to the SCS technicians. The jobs where grades are flat or the outlet is a problem, or the determination of tile size is open to question, will be handled by the SCS technicians.

4. The application of conservation practices will be carried on as rapidly as farmers are ready for them and qualified help is available to assist in their proper layout and establishment. It is desirable to keep a balance between planning and application. It is also important to maintain a balance between those things that control soil loss and that affect the maintenance of fertility.
- a. Limestone - Farmers will be encouraged to continue the use of limestone where needed to correct soil acidity. It is estimated that 50,000 tons should be used annually to complete the initial application and provide for maintenance.
 - b. Fertilizers - Farmers should be encouraged to have soils tested to determine fertilizer needs and to make fertilizer application according to test. Samples from at least 600 farms should be checked annually until the job is completed or on a sustaining basis.
 - c. Rotations - The adjustments of rotation should be made to conform to the capability of respective fields. On Class I and II land that is high in organic content 50% may be used for row crop. On the balance of Class I and II land a 40% rotation is recommended. For Class III land that is protected from erosion, row crops should be limited to 33%. For timber type soils and the balance of Class III land a rotation of C-O-M-M should be used. Shifts to the proper rotation should be made immediately based upon the best information available to the farmer and the employees of the department who are giving him program assistance.
 - d. Contouring - On all slopes over 3%, contouring is recommended, however, where contouring proves impractical because of irregular topography a longer rotation planted across the slope may be used. It is estimated that approximately 12,500 acres of row crops should be contoured annually.
 - e. Terracing - Terraces are an effective permanent type of erosion control suitable for long slopes and occasionally on the top of short slopes. The terrace needs of the county are estimated at 1000 miles.
 - f. Waterways - Wherever possible waterways are to be maintained in good grass sod, active gullies should be reshaped, fertilized, seeded and mulched. The maintenance after establishment is very important. Where gullies are too steep or have active overfalls, it may be necessary to construct some type of erosion control structure.

On each farm careful consideration should be given to the problem so it can be considered in its proper relation to the other needs of the farm and the other farms in the county. It is roughly estimated that 200 miles of water courses will need reshaping and seeding and that a total of 1000 structures of various sizes will be required.

5. In order to make this plan work most effectively the following general premises have been accepted.
 - a. Although the Soil Conservation Service has been given the responsibility for all technical aspects, it is beyond the physical ability of the assigned technicians to handle all the determinations, supervision, checking and approval. Some of it must be delegated.
 - b. Delegation of responsibility should be made to others in line with the difficulty of the jobs, and their knowledge and ability to carry out the responsibilities.
 - c. The ARCP Committee will assume responsibility for determining the total conservation load and will periodically study and coordinate the various programs. They will counsel with the SCS technicians to determine priority for action, make assignments and provide for the employment and training of additional help when needed.
 - d. The commissioners of the Soil Conservation District will assume responsibility for periodically evaluating the work load developing through the district program.
 - e. The PMA Committee will assume responsibility for periodically evaluating the work load developing through the Agricultural Conservation Program.
 - f. State funds under control of the district commissioners will be used where available to provide aids to assist the SCS Technician.
 - g. The assistance over and above that which can be provided by SCS and the district is to be provided by PMA, either through community committeemen or program men, or by assignment of funds to SCS for employment of additional personnel.
 - h. Additional responsibilities will be assigned to community committeemen to obtain more information at time of sign up and to begin to arrange at that time for lay out assistance in cases where it will be needed.

- i. PMA will send to each farmer along with the Notice of Approval of Practices a copy of simple specifications so the farmer will have knowledge of what is required before payments may be made under the program. PMA will also require of the farmers that adequate notice be given before the work is started.
- j. Since the permanent practices differ widely, several methods will be necessary to insure the best use of available personnel and funds. These methods have been set forth above.

Capability Guides (Goal 6)

The major objective of this program is the proper use of land according to its capabilities. It is desirable to develop as soon as possible some type of guides to be used by all agencies in giving program assistance to farmers. At present detailed surveys and capability maps have been made for about one-third of Des Moines County.

Where a basic conservation farm plan has been worked out by the farmer with the help of the technician working with the soil conservation district, the plan and its current revisions will serve as a guide to departmental employees.

On farms where conservation surveys have been made and capability maps are available, they shall be used as guides by departmental employees in assisting farmers to select correct rotations, desirable conservation practices and additions such as limestone and fertilizer.

On the balance of the farms the general knowledge of the departmental employees using the best information available will be used.

At present the Soil Conservation Service is making conservation surveys and providing capability maps. Mapping processes and techniques need to be improved and additional personnel assigned to insure complete capability information as promptly as possible.

Farmers requesting conservation farm plans with the district will ordinarily be given priority in mapping. Those who receive initial assistance in laying out a conservation measure and indicate a desire to go farther will come next. However, if there are areas which in the opinion of the ARCP Committee need early attention, this priority may be modified.

Individual Conservation Programs (Goal 7)

The basic conservation farm plan developed by the owner and/or operator of a farm is probably the best guide toward conservation farming. For this reason steps will be taken to speed up the progress in farm planning.

Whenever a farmer requests assistance from any agency of the Department, his request will be acted upon in line with the policies and procedures of the agency to which the request is addressed. If his request is for one of the permanent type of conservation practices, the applicant will be given opportunity to indicate whether or not he wants to go farther. If so, he will sign a request for assistance which will make him eligible for conservation survey and a complete conservation farm plan if he wants it.

The planning technicians of the SCS will continue to assist farmers in developing basic conservation plans. As soon as farmer committeemen and others have been adequately trained to carry out the application and planning of conservation practices, the SCS technician can step up the rate of planning thereby speeding the day when there will be a conservation plan on each farm in the county.