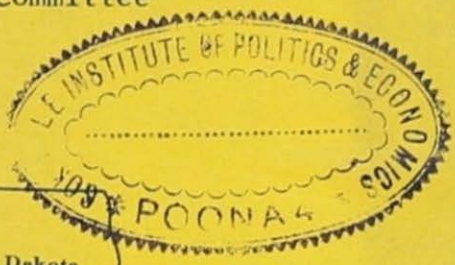


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EDUCATION IN CONSERVATION OF SOIL AND WATER

Report of
The Northern Great Plains
Conservation Education Committee

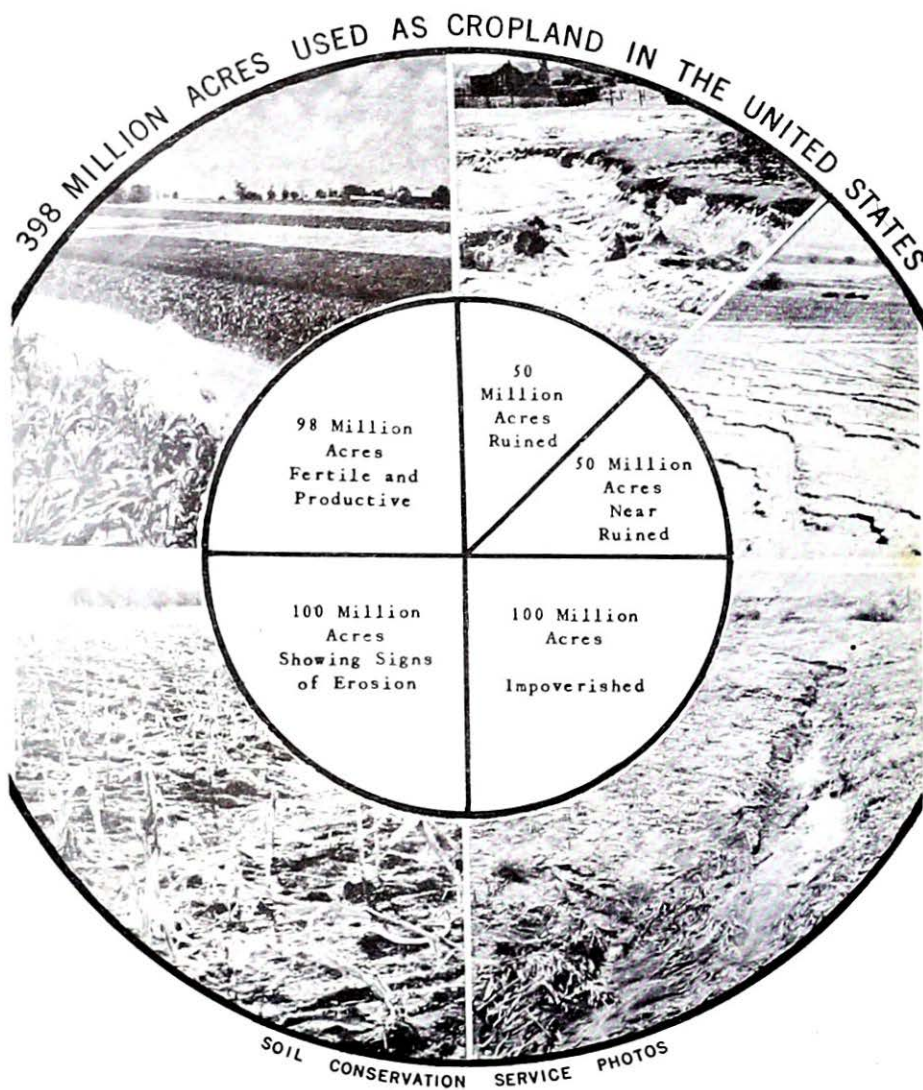


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SUMMER WORKSHOP
State Capitol - Lincoln, Nebraska
July 30 - August 4, 1945

Why an adequate Program in Soil and Water Conservation Education is essential



**EDUCATION IN CONSERVATION
OF
SOIL AND WATER**

A suggested Approach to the Problem of Education
in Soil and Water Conservation for Elementary
and Secondary Schools and Teacher-Education
Institutions in the Northern Great Plains Region

**Report of
The Northern Great Plains
Conservation Education Committee**

**SUMMER WORKSHOP
State Capitol - Lincoln, Nebraska
July 30 - August 4, 1945**

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STATES OF THE NORTHERN GREAT PLAINS REGION

Kansas
Montana

Nebraska
North Dakota

South Dakota
Wyoming

FOREWORD

Only in a few instances have educators representing schools, colleges, state departments of education, and other educational organizations in a large geographical area, had the opportunity of coming together for the express purpose of considering the vital problem of improving educational programs in soil and water conservation. Perhaps no other group of educators has had such an excellent opportunity for making a broadside attack on the problem as that afforded the educational representatives from the Northern Great Plains Region in the summer workshop on soil and water conservation education held in Lincoln, Nebraska, July 30 to August 4, 1945. Those who participated in the workshop felt that the Soil Conservation Service had taken a very significant step in making possible such a meeting. They greatly appreciated having the opportunity of studying carefully and cooperatively soil and water conservation education and of developing this report relative to it.

It is the hope of the Committee that the report will be widely distributed and that it will receive the careful consideration of educational leaders throughout the nation, particularly in the Northern Great Plains Region.

In addition to the members of the Committee listed herein, several others contributed significantly to the development of this report. The Committee is especially indebted to George E. Rotter, Editor and

Assistant in Curriculum Development, Nebraska Department of Public Instruction, who worked closely with the group throughout the week and who assisted with the formulation of the report. We wish to express here also our appreciation of the contributions made to the thinking of the Committee by the following individuals: Tom Dale, Special Writer in Educational Relations, Soil Conservation Service, Washington, D. C.; Dr. G. E. Condra, Dean and State Geologist, Conservation and Survey Division, University of Nebraska, Lincoln, Nebraska; Wayne O. Reed, State Superintendent of Public Instruction, Lincoln, Nebraska; and H. E. Engstrom, Assistant Regional Conservator, Soil Conservation Service, Lincoln, Nebraska.

The Northern Great Plains
Conservation Education Committee

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Section I

THE RELATIONSHIP OF GENERAL EDUCATION TO CONSERVATION EDUCATION, AND TO SOIL AND WATER CONSERVATION EDUCATION

In determining the relationship of general education to conservation education, and more especially to soil and water conservation education, one must first have an adequate concept of general education. From the point of view of the school, general education may be defined as those experiences planned to help the individual develop the understandings, attitudes, skills, and habits essential to his adequate performance of those activities which are fundamental and common to all citizens, regardless of their vocation. It is, moreover, education which is in harmony with the beliefs and aspirations of our democratic society and which is appropriate to the varied needs of each individual.

This concept of general education implies that the school program must be organized to achieve commonly accepted objectives of education and that it must contain unified experiences selected from the major areas of human activity, which have been variously stated. One example of such a statement is as follows: Family and community living, production, consumption and distribution of goods and services, transportation and communication, government, education, recreation, expression and satisfaction of spiritual and aesthetic needs, and conservation of resources.

Basic to man's continued personal and social development in all of the areas of human endeavor, regardless of how they are classified, is his recognition and acceptance of the responsibility that he adjust himself properly to his total environment. The establishment and continuance of such an adjustment is obviously dependent, first, upon an understanding and appreciation of all the resources upon which he depends for his material and spiritual life, and second, upon the concerted individual and cooperative effort he makes in preserving, developing, and properly utilizing them.

Viewed in this light, conservation education becomes an integral part of general education. And, since we look upon the elementary and secondary schools primarily as institutions of general education, it follows that appropriate educational experiences concerning conservation must be made a part of the basic programs of each of these schools regardless of the type of curriculum organization used.

For the proper consideration of conservation problems, conservation education has commonly been divided into the conservation of human resources and the conservation of material or "natural" resources. Of all man's resources which are logically classified as non-human or "natural" and over which a considerable measure of control can be exercised, soil and water are commonly recognized as being among those upon which man is most directly dependent. Education in soil and water conservation is, therefore, a most important and vital aspect of conservation education

and consequently also of general education. Because the conservation of these particular resources has suffered neglect to the point where there is deep concern and alarm among thinking people, immediate and properly directed emphasis needs to be given to their protection, maintenance, rebuilding, and proper utilization. If this is to be accomplished it is imperative that programs of our schools, both urban and rural, give more adequate attention to education concerning soil and water conservation.

Although general education, with which the elementary and secondary schools are chiefly concerned, is vital to the achievement of the great major goals of conservation, it must, nevertheless, be supplemented by conservation education of a more specialized nature. There is a distinct place for some specialized education in conservation at the secondary school level, for example, in vocational agriculture classes. It appears, however, to be the responsibility of the colleges and of adult education to provide most of the needed technical training.

It is recognized that both general education and specialized training in conservation are essential. The elementary and secondary schools can make their major contribution in the area of general education and it is particularly in this area that a concerted effort needs to be made if an effective long-time program of soil and water conservation is to result.

Section II

SOIL AND WATER CONSERVATION EDUCATION IN THE ELEMENTARY AND SECONDARY SCHOOL PROGRAMS

Since the purpose of the elementary and secondary school is to meet the needs of boys and girls and the needs of their community, state and nation, the school program must be related closely to the activities and problems of everyday life.

The conservation of soil and water certainly represents one of the most significant problems in the Northern Great Plains region. The school can be a great power in the solution of this problem if appropriate educational experiences concerning the conservation of natural resources are included in its program.

Problems relative to the conservation of soil and water should receive continuous emphasis throughout the programs of elementary and secondary schools. Appropriate understandings, attitudes, skills and habits may be developed in each of the many studies and activities offered. Science and social study courses as well as the core curriculum are of such a nature as to be particularly well suited for the inclusion of educational experiences directly concerned with the conservation of soil and water. The problem may also be approached in such areas as mathematics, English, and manual and fine arts.

ELEMENTARY SCHOOL PROGRAM

In establishing an effective program of soil and water conservation education in the elementary school it would seem desirable, as an initial procedure, to determine the skills, habits, attitudes and understandings relative to soil and water conservation which all pupils at the various grade levels might well develop. To do this will necessitate making a careful study of pupil and community needs in terms of soil and water conservation. It will also require a thorough examination of results of research and experience as indicated in research studies, state and national committee reports, and instructional materials prepared for use in the several school grades and subject-matter areas. Officials representing Federal and State Soil Conservation Districts, and others whose purpose it is to foster some phase of the conservation program, should be invited to examine such a listing for its scientific accuracy or possible inadequacy.

Because the various aspects of soil and water conservation may most directly be approached in either the social studies or sciences, it would seem advisable that units of study designed for the development of appropriate concepts, skills and attitudes should be prepared for inclusion in these areas at the various grade levels. The overall, unifying theme or objective of such units may well be the social significance of soil and water conservation in terms of the present and future well-being of the local community and the wider society. Care must be taken in the

preparation of the units, however, to avoid unnecessary repetitions and to provide activities appropriate to the grade level for which each is intended.

Since the problem of soil and water conservation, like many others in the social studies and science, presents many aspects which may be effectively considered in the programs planned for other areas of study, units of work in conservation should include a wide variety of pupil activities to permit of and to facilitate correlation with all phases of the total school program. Countless opportunities exist for the planning of activities relative to soil and water conservation which will provide pupils with rich experiences in developing proficiency in arithmetic, reading, writing, spelling, speaking, observation, and listening, and at the same time aid them in acquiring a realistic understanding and appreciation of the problem of soil and water conservation. The provision of a wide variety of activities will also aid greatly in avoiding duplications that result in a deadening of interest and restricted learning.

In order that the program in soil and water conservation be most appropriate and most effective in terms of meeting pupil and community needs, it must make extensive use of local resources. Of major importance among these resources are the conditions and activities of the surrounding community. These, while providing subjects in themselves for study and activity in many social study or science units, will in most cases be excellent beginning points for units intended

to be more comprehensive in scope. For example, while an entire unit for the primary grades may be focused upon farm life in the community, with particular emphasis given to the importance of soil and water and the necessity for conserving them, a similar unit might be prepared for the intermediate or upper grades which would include not only a study of farm life and soil and water conservation locally, but in distant areas or in lands far away from home as well.

The local community with its prevailing problems and situations is not only of vital importance in conservation education as a first-hand resource for observation and study; it also offers the opportunity for the application of principles of conservation. Elementary school children, especially those of the upper grade levels, should be provided with educational experiences which involve the actual carrying on of soil and water conservation practices. Opportunities for doing this may even be found on the school-grounds.

Other resources in the community of value in carrying on an effective program in soil and water conservation are referred to in Section IV of this Report. As much use should be made of them as possible, especially since there is a considerable lack, at the present time, of textual and supplementary reading materials properly graded and properly illustrated for use in the elementary grades. This situation makes it particularly important for the school to make available such teaching aids as posters, films and film strips, slides, still pictures, charts and

graphs. The teacher, herself, through personal study and investigation, can and should gain a background of information relative to soil and water conservation that will enable her to provide a worth-while program.

THE HIGH SCHOOL PROGRAM

This statement regarding the place of soil and water conservation in the high-school program is based upon two assumptions: (1) That all students should acquire as a part of their general education, basic understandings, attitudes, skills and habits relative to soil and water conservation, and (2) that some students, in consideration of their present and probable future vocational needs should be provided with suitable specialized training in soil and water conservation while in high school.

For the elementary school it has been proposed that appropriate educational experiences in soil and water conservation be provided at each grade level. Because the primary concern of the secondary school as well as that of the elementary school is one of general education, it would seem desirable to include in the basic secondary school program appropriate experiences in soil and water conservation at each grade level, regardless of how the curriculum is organized. Those schools whose programs are designed in accordance with the core curriculum plan will have little difficulty in doing this. High schools not employing the core curriculum plan may find it desirable to introduce suitable units on soil and water conservation into

those courses, particularly in science and in social studies, which are considered of such a basic nature as to be required of all students. If this procedure is followed, care must, of course, be taken to avoid undesirable duplication of experiences in the units that are presented.

The difficulty of avoiding duplication in subject matter and activities may be eliminated to a large extent if only one comprehensive unit of study in soil and water conservation is presented at each grade level. Such a procedure will facilitate a treatment of the several aspects of soil and water conservation, permitting, for example, special emphasis to be given the scientific aspects of soil and water conservation at one point and the social significances of the subject at another. Units of this nature, however, must be supplemented by desirable experiences carefully integrated with various subjects in the program. They must also be planned and arranged in a sequence which will bring about the gradual development of desirable understandings, habits, skills and attitudes relative to soil and water conservation. One plan of introducing single units at each grade level would be to include units on soil and water conservation in world geography, biology, American history and problems of American democracy in grades nine, ten, eleven and twelve, respectively.

The question is frequently raised concerning the advisability of offering a separate course in the conservation of natural resources. Because of the

fundamental and comprehensive nature of the problems of conserving natural resources, and the necessity therefore of relating these problems with the several subject-matter areas, it would seem that an integration of the study into existing subjects would be a more desirable procedure for the general education program than the establishment of a special course in the conservation of natural resources. This is not to indicate, however, that a special course as a part of the general education program may not have some merit in giving this important study particular emphasis. Certainly it would be preferable to giving only an incidental and therefore almost surely an inadequate treatment to the subject.

Instruction in soil and water conservation that is of a non-vocational nature will not be adequate, of course, for satisfying the needs of high-school students who may already be engaged in farming or who anticipate farming or work in conservation as a vocation after graduation. For such students the secondary school should feel the distinct responsibility of providing suitable specialized training in soil and water conservation, such as can be made available in a vocational agriculture program or in courses especially designed to emphasize principles and practices in the conservation of natural resources.

Section III

SOIL AND WATER CONSERVATION IN TEACHER EDUCATION

The preceding section has indicated what should be the nature and organization of conservation education in the elementary and secondary schools. These plans will never move beyond the blueprint stage until qualified teachers are available to put them into action. All public elementary and secondary school teachers would therefore have, as part of their general education, experiences which will give them knowledge of, and insight into, the problems of soil and water conservation. The understanding of soil and water conservation education so gained will enlarge the teacher's vision of social goals and enrich the rewards of her work. All elementary teachers, and teachers of natural science, agriculture, and social studies in secondary schools should be prepared to teach effectively the aspects of soil and water conservation appropriate to the needs, learning capabilities, and interests of the children they teach.

PRE-SERVICE EDUCATION OF TEACHERS

To insure competent teaching of soil and water conservation at the different levels of the public schools, definite provision for conservation education must be made in teacher education curricula. There are two general ways in which such conservation education may be organized. They are (1) the preparation of units dealing with various phases of conservation and their inclusion in present course offerings, and (2) the development of special courses

dealing with conservation education. Within either framework, certain procedures are advisable. The teaching of the work in the college courses should itself exemplify the best ways of teaching conservation in elementary and secondary schools. The fullest possible use should be made of all resources bearing on the topic. There should be field work, directed observation, the use of visual aids, utilization of all available literature, and personal experiences in meeting and getting to know local and regional leaders in soil and water conservation. Teachers-in-training should become familiar with the program of organized groups for rural youth, such as the 4-H Clubs and the Young Citizens League, and with the possibilities of educational work within these groups.

In incorporating units on soil and water conservation into present courses careful planning and supervision will be necessary to avoid undesirable duplication, and to bring out in the various courses all the significant implications of soil and water conservation.

Fairly specific suggestions for teacher education are made in the following section of this Report, in which both types of organization suggested above are used. It is recognized that no one pattern of teacher education can be offered for the many different teacher education institutions, and that local adaptations of programs are not only inevitable, but desirable.

- (1) Recommended for rural teacher education curricula of one or two years in length is the systematic, planned teaching of soil and water conservation purposes, practices, and accompanying teaching methods in present course

offerings in government, geography, rural sociology, agriculture, and all professional courses dealing with methods of teaching elementary science and social studies.

- (2) For two-year elementary teacher education curricula, for town and city teaching positions, the same plan is recommended.
- (3) For four-year elementary teacher education curricula, the same plan is recommended and, in addition, it is recommended that a special professional course dealing with education in the conservation of natural resources be required.
- (4) For all secondary teacher education curricula the recommendation is that a similar, but modified, program be offered--that systematic, organized units in soil and water conservation be included in the courses in government, sociology, geography, and natural science, one or more of which all students should take. In addition, it is recommended that a special professional course in conservation education, including soil and water conservation, be required of students preparing to teach social studies and science in secondary schools. It is assumed that students preparing to teach vocational agriculture will receive as part of their training specialized work in the field.

The key position in teacher education of the practice and demonstration schools, including rural schools affiliated with colleges and universities, should not be overlooked. Curriculum development in those schools should be planned to give teachers-in-training opportunities to observe and participate in experience units in conservation education.

A PROGRAM COMBINING PRE-SERVICE AND IN-SERVICE EDUCATION

A program of teacher education combining pre-service and in-service activities, in operation at Colorado State College of Education, the University of Wyoming, and possibly at other schools, appears to offer particular opportunities for education of elementary teachers in soil and water conservation. Briefly, the plan known at the University of Wyoming as "The Five-Year Curriculum," provides for two years of on-campus study, followed by a year of teaching during which six quarter hours of credit are earned through University directed activities, then attendance at a week-long conference on the campus. This is followed by summer session attendance. The next year is again spent in teaching, and again six quarter hours are earned. This is followed once more by a week-long conference and summer session study, and on-campus study the next academic year, leading to the B.A. degree the following June.

The work by which credit is earned during the first year of teaching is defined as "a study of the school in its community." Here, surely, education in the conservation of natural resources could be developed.

The establishment of teacher-education curricula similar to the one described, combining and relating in an organized way the pre-service and in-service programs, is a probable development in other colleges and universities in post-war years. If such a trend does develop in the Northern Great Plains states it will

present a uniquely favorable opportunity for teacher education in soil and water conservation. The program at the University of Wyoming is mentioned only as a concrete example of that type of curriculum, and to suggest the possibilities of such a plan.

The Report turns next to a consideration of in-service teacher education.

In-Service Education Of Teachers

By far the greatest proportion of the men and women now teaching have had little or no preparation for instructing in the field of soil and water conservation. A large per cent of those who will enter teaching within the next few years will have had equally inadequate preparation in the field. This fact emphasizes the strong desirability of instituting as rapidly as possible a program of in-service education for teachers which will interest them in and prepare them for instructing boys and girls in the conservation of soil and water.

The value of in-service education depends in large part on the extent to which the problems dealt with grow out of a felt need on the part of the teachers and on the extent to which the findings and decisions can be applied immediately to the classroom situation. If these conditions prevail in large measure the school and the in-service study center together provide a laboratory in which the problems of teaching are worked out and the solutions refined under actual classroom conditions. The plans of in-service education proposed, therefore, should incorporate these

desirable features to the fullest degree possible.

In-Service Study Centers

A group of teachers may be interested by some local educational leader in studying conservation education. For rural teachers this individual will generally be a county superintendent, and for teachers in a town school system it will more often be the principal or city superintendent. Interest may be aroused in several ways. For example, beginning with the statements of some of our nation's leaders as to the importance of conservation the teachers may be led to test their students' interest in the knowledge of conservation and also to determine the extent to which soil and water conservation are practiced in the surrounding area. The extent of interest, knowledge, and practice revealed will probably show that there is much to be desired.

The next step will be to consider what can be done about the situation. If the nearest teacher-education institution has facilities for sending an instructor into the field and if arrangements can be made for a field-problem course the next step will be to arrange for a meeting of the instructor with the local teachers. Should a study center materialize, there will first be a careful survey and evaluation of the conservation practices that are adapted to that area. This will be done most often in cooperation with a teacher of vocational agriculture, the county agent, or men from the nearest soil conservation district. Field trips, use of visual aids, lectures and reading

will all contribute to an understanding of the subject. The teacher will, during this phase of the study, get a vivid picture of what remains to be done in the community.

So far it is the foundation of necessary information regarding conservation needs and practices that has been laid. Next, attention must be turned to the ways and means of conservation education for boys and girls at the grade levels involved and under the learning situations that prevail. As children advance from grade to grade their interests change and their level of comprehension expands. To a certain extent boys and girls may require a different approach to the problem. Certainly the pupils in a one-room school in an irrigated section will look at the problem differently than boys and girls in the rolling areas in the eastern edge of the great plains. Moreover, a different approach should be used with country pupils than with those in the large town or city.

Whatever the situation, what appear to be the appropriate procedures will be decided on. As they are tried out they will be evaluated and reports will be formulated and brought back to the group. In the light of the decisions made, there may be adjustments by the teacher reporting and perhaps by other teachers, too.

Other In-Service Programs

There will not always be the opportunity to set up a program of in-service education under ideal circumstances. Perhaps a program similar to the one

described will be carried on in a summer workshop. In such a case the teachers will be further from the classroom and community situation. If the summer workshop could be held away from the campus, that weakness would be eliminated in part. In any case, though, there must be a delay in trying out the plans developed until school opens. In-service education in summer workshops is at times best achieved through the planning of courses of study and the preparation of curriculum materials. The county institute also affords an opportunity for a general presentation of the subject of conservation. Ideally, an intensive plan for in-service conservation education should follow the more general presentation.

In the case of in-service programs carried on during the regular year, lack of strength in local educational leadership may make it necessary for the teacher-education institution to exercise more initiative in getting the program under way than was assumed in the situations first described. That will make the arousing of initial interest more difficult, but the project should not be dropped on that account.

It is entirely possible for the local administrator to carry on the in-service program of teacher education in conservation without the assistance of a teacher-education institution. If this is done, local or nearby specialists in conservation should be used, as was suggested earlier. The method of attack on the problems and the step-by-step procedure may well be much the same as was suggested for the situation in which a college or university is involved. College

credit is not a necessary element in the picture. While it may provide an immediate incentive to the teacher, the inherent value of conservation is a more basic motive.

THE IMPORTANCE OF STRONG STATE LEADERSHIP

Although it has been indicated that the immediate stimulus for the improvement of teacher education should come from local leadership and from individual institutions of higher learning, the State Department of Public Instruction has an important role, too. The many ways by which it may exert its influence--addresses by the staff, publications, the formulation of policies and requirements, personal counsel, and the like--should be used to encourage a study of conservation and the full use of desirable procedures for the pre-service and in-service education of teachers. It should be recognized that no one agency can achieve the results desired. Many will contribute. If the goal sought is continually kept in mind harmony and proper coordination will be readily achieved.

Section IV

RESOURCES FOR EDUCATION IN SOIL AND WATER CONSERVATION

The effectiveness of the educational program in soil and water conservation is greatly dependent, as is true in various other aspects of the school program, upon the use that is made of available resources, including instructional materials and services. This is true both of the program in teacher-education institutions and in the elementary and secondary schools.

As is pointed out in Section V of this Report, basic instructional materials are an important requisite to an adequate educational program in soil and water conservation. These need to be supplemented, however, in various ways by authentic reference materials and special services, such as those that can be supplied by the Soil Conservation Service, the Agricultural Extension Service, farmers, and other individuals or groups. Fortunately, a wide variety of materials and services on soil and water conservation are available for use in teacher-education institutions and in elementary and secondary schools. Materials available include numerous bulletins, pamphlets, reports, and visual and auditory aids such as films, film strips, slides, charts and transcriptions.

The school's program in soil and water conservation education may be enriched by making valuable use of the informational services provided from various sources. For example, frequent tours and excursions can be arranged in cooperation with local agricultural

agents or with representatives of the Soil Conservation Service. Such trips may not only prove beneficial in the opportunity they provide for observing desirable soil and water conservation programs, but may also give students an occasion to determine local needs and an opportunity to consult first-hand with farmers who are employing conservation measures locally. It will also prove desirable on some occasions to invite such persons as vocational agriculture teachers, county agents, or officials of the soil conservation districts to speak to classes or to general assemblies on soil and water conservation.

Since many of the existing reading and other instructional materials on soil and water conservation have not been designed specifically for use in schools and colleges, and because these materials have been produced not only by governmental agencies but also by commercial firms and various other interested organizations, it is advisable that they receive careful appraisal before being used in the schools.

Appended to this Report is a rather complete list of national, regional, state, and local resource agencies which can provide supplementary materials and services for education in soil and water conservation. Some indication is given concerning the nature of the materials and services which these organizations can supply. It is hoped that this listing of resource agencies will encourage a more effective use of the materials and services available.

Section V

INSTRUCTIONAL MATERIALS FOR SOIL AND WATER CONSERVATION EDUCATION

That soil and water conservation in elementary and secondary schools should be primarily a matter of general education, and further that for the most part it should find its place in the curriculum within present courses, was set forth in the section on the place of soil and water conservation in the public schools. This statement of types of instructional materials needed is based on that viewpoint.

Materials Appropriate to Soil and Water Conservation Education

For the elementary school direct treatment of soil and water conservation should be included in social studies and science textbooks, and in supplementary books. Supplementary reading materials are of particular importance for use in such unified and comprehensive units of study as have been suggested in Section II of this Report. The treatment of soil and water conservation in elementary textbooks and supplementary materials should be simple yet inclusive, scientifically accurate, clear, well and abundantly illustrated, and carefully graded.

The same standards should be met in secondary school textbooks. A balanced treatment of the topic should be included in textbook series in the social studies and the natural sciences. Adequate supplementary reading materials should be available for reference use and extensive reading.

Books and other printed materials will not provide all the needed instructional materials for a problem like soil and water conservation. A liberal use of visual teaching aids is essential. These should include sound and silent motion pictures, slides, film strips, maps, diagrams, graphs, still photographs, transcriptions, models, charts, and posters. Equipment for laboratory experiences, indoors and out, should be provided.

Specialized treatment of soil and water conservation in high-school agriculture courses will call for special types of instructional materials. In addition to those listed above, special textbooks, equipment and facilities and farm machines are needed for experiences in school laboratories and on the land itself.

Materials Now Available

Although there is a great abundance of materials on soil and water conservation in such forms as books, bulletins, pamphlets, charts, and visual aids, relatively few of them have been designed for specific use in the schools. Considerable attention needs, therefore, to be given to the preparation of an extensive range of instructional materials which will adequately supply the needs of the various school grades in the several geographical regions. This is not to imply, however, that some materials in soil and water conservation appropriate for use in the schools are not now available. Materials now obtainable may be classified in the following categories:

- (1) Elementary texts in geography, nature study, and social studies that include sections on soil and water conservation.
- (2) High-school texts in civics, problems of American democracy, geography, general science, and biology which give considerable attention to appropriate phases of conservation.
- (3) Booklets written for particular grade levels, each of which deals with some aspect of conservation.
- (4) General reference works that include conservation as one the topics covered.
- (5) Publications prepared by industry, particularly manufacturers of farm implements, which stress the importance of conservation and show how it should be practiced. Publications of similar types prepared by public service groups.
- (6) Bulletins issued by governmental agencies which provide detailed assistance with various phases of conservation.
- (7) Courses of study, teaching units, and other instructional materials prepared for teachers by state departments of education, county and local school systems, teacher-education institutions and professional groups.
- (8) Posters, pictures, motion-picture films, and other visual aids provided principally by governmental agencies and by industry.

Suggestions for Selecting Materials from Those Now Available

While it would be very helpful if teachers had at hand a dependable classification and evaluation of materials dealing with soil and water conservation now available, they must proceed for the time being at

least on the basis of present information. The following suggestions are offered:

- (1) One of the criteria which local school authorities and teachers should use in the selection of high-school or elementary texts in the social studies, nature study or natural science, agriculture, and geography should be the extent and suitability of the treatment of soil and water conservation.
- (2) An effort should be made to assemble at a number of conveniently located centers within each state as wide a selection of booklets, bulletins, courses of study, teaching units, and other supplementary materials dealing with soil and water conservation as are obtainable. At these centers individual teachers or committees of teachers could thus make their selections on the basis of a partial evaluation at least.
- (3) In cases where it is not feasible to set up such centrally located collections, individual teachers or schools should obtain materials that seem most promising.
- (4) Whatever the method by which supplementary materials are obtained, they should be examined with a view to their use in a study of soil and water conservation in nature study, the social studies, or the core curriculum in the elementary school or in the social studies, geography, agriculture, or one of the sciences in the high school.

A Suggested Procedure for Evaluating Materials

An extensive range of instructional materials for teaching soil and water conservation is now available from various sources. A survey of these materials, with reference to planned development of new material, clearly shows that a necessary next step

is that of appraisal.

As appraisal procedure it is suggested that a comprehensive classification be made of these materials as to purpose. With this a parallel listing should be made of the major needs, as for example materials needed in elementary schools, with appropriate specific items. A check will then reveal areas in which new materials are needed.

Further, discriminative criteria should be formulated with which to judge instructional materials. For example, these criteria should be evaluative of such characteristics of the reading material as suitability for various age levels in terms of needs and interests, vocabulary, quality and adequacy of illustrations, format, and scientific accuracy. In a similar way criteria should be established for visual teaching aids, and other types of instructional materials. Thus, it can be shown what new materials are needed, and standards established which should be met in their preparation.

Suggestions for the Development of Needed Instructional Materials Not Now Available

Until the procedures just suggested for evaluating existing instructional materials in soil and water conservation have been carried out the adequacy and completeness of what is now available cannot be known. It is safe to assume, though, that some of the materials could be made more usable and that in some areas there are serious gaps. The suggestions made for bringing the materials up to the standards desired

are based on experiences gained in improving other areas of subject matter. The suggestions are these:

- (1) During the foreseeable future textbooks will play a major role in shaping the curriculum in the schools of the United States. It is necessary, therefore, that an intelligent coordinated effort be made to convince textbook writers and publishers that they should give appropriate and adequate attention to soil and water conservation in the subject areas to which reference has already been made. This may be done in a number of ways. Perhaps some professional educational group such as the National Council for the Social Studies could be induced to prepare a yearbook on the subject. It is possible that a national advisory committee of educators should be appointed by the Soil Conservation Service to prepare recommendations for submission to authors, publishers and professional groups. Some group should certainly be responsible for placing complete and attractively illustrated materials on conservation before those who are in a position to influence such practice. If the text or texts thus chosen do not deal with conservation in such a manner as to reveal satisfactorily needs and practices within the state, it may be advisable to prepare supplementary materials that accomplish this objective.
- (2) Supplementary teaching materials will always be an important resource. Inasmuch as the agency that evaluates existing materials will no doubt discover in them many weaknesses and omissions, the logical next step will be appropriate revision. The United States, fortunately, has the talent to do this work and the funds as well. It would be entirely in order for the evaluating agency to suggest several possible contributors in each of the areas where more work is needed. Since a preliminary canvass makes it clear that there is a serious lack of

publications suitable for the elementary grades, it is recommended that the Soil Conservation Service prepare such materials properly graded and appropriately illustrated.

- (3) There are several recognized producers of visual aids intended principally for school use. An effort should be made to interest them in the preparation of such aids, including sound pictures for different grade levels, and for teaching of different phases of conservation. Visual aids should also be made by individual schools to include features of local significance.
- (4) The laboratory phases of conservation education have been given only slight attention. Recommendations should be drawn up for appropriate experiments and the equipment and supplies involved should be described. It might thus be possible to interest commercial apparatus companies in supplying the demand that will thus be created for the laboratory facilities.
- (5) Pupils will probably learn more about conservation of soil and water through observation and participation out-of-doors than by any other method. It seems that appropriate manuals for guiding such observation and participation are not generally available. They should be prepared but in such a way that they may be supplemented or altered to suit them to the local situation.

Types of Teacher Education Materials Needed

The need for teacher aids in soil and water conservation is particularly urgent. It is a new topic, relatively, in the curriculum. Few have had adequate preparation, if any, for teaching it. Yet it is a topic which should be taught in all schools. It is

one in which the content is as yet not clearly established, and it cannot be taught by systematic textbook procedures. Further, local adaptations are inherently necessary in teaching it. These difficulties combine to make effective teaching of soil and water conservation a perplexing task for most teachers and point to the need for useful teacher materials.

Teacher education institutions, the Soil Conservation Service, state departments of education and other agencies are giving attention to this need. Teaching units are being developed and systematic outlines for teaching the topic are appearing in courses of study. This trend should be accelerated and additional types of materials need to be developed. Professional books and bulletins might well be published, giving simplified treatment to the technical aspects of soil and water conservation, to the social and economic aspects of the work, and with clear and practical suggestions for teaching the topic. Descriptive reports of units, as records of real and successful teaching experience, should be collected and made available. Special attention should be given to outlining procedures for laboratory, and observation-demonstration and participation experiences.

Curriculum laboratory materials so developed, collected, and classified in the colleges and universities will be useful in both pre-service and in-service teacher education.

Section VI

EVALUATION IN SOIL AND WATER CONSERVATION EDUCATION

Continuous evaluation is necessary to insure the most desirable development of the program outlined in this Report. Such appraisal will provide a useful record of achievement, stimulate improvement, and assist in eliminating undesirable elements in the program.

Insofar as possible, several principles should be observed in evaluating the program:

- (1) Evaluation, which includes all techniques by which pupil growth in understandings, skills, habits, and attitudes may be appraised, is much broader than measurement or testing.
- (2) Evaluation is primarily concerned with revealing growth and direction of movement, and only secondarily with depicting status and comparisons between individuals or groups.
- (3) Evaluation is a cooperative process in which all concerned work together, rather than something done by one person or group to another.
- (4) Evaluation is a continuous activity which permeates the whole process of teaching-learning, not merely an end product or activity.

Appraising the Growth and Development of Students' Understandings, Attitudes, Habits and Skills Concerning Soil and Water Conservation

The change that occurs in students as they study soil and water conservation is the fundamental criterion by which the program must be appraised. The types of

changes that are desired, therefore, must, at the outset, be clearly defined in terms of student behavior. Such a clear statement of objectives will do much to insure successful development of the program.

Paper and pencil tests are useful in determining the extent to which boys and girls can recognize essential understandings in soil and water conservation. Teachers may use them at the beginning of a unit for diagnosis, at the beginning and end of units to measure growth, and at any time during the unit to stimulate interest in the problem. There is particular need for instruments that will test the ability of the student to apply his understanding. Attitude scales for determining the beliefs of pupils concerning conservation practices and conditions may be helpful to teachers in providing a basis for discussion, in stimulating interest, and in discerning the effect of instruction upon pupils' thinking. A record of students' reading is useful in revealing interest in the problems of soil and water conservation. Simple exercises are useful in assisting students to see how well they have developed basic skills.

Some techniques for measuring understandings, attitudes and skills already exist. But the field is relatively undeveloped and extensive pioneering work is required. While much can be done by colleges and universities in summer sessions, specialists in evaluation should be made available to develop materials. Also, this phase of the work may be stressed in the in-service education program described earlier.

Equivalent forms of all instruments should be made to facilitate measurement of changes that occur in pupils.

Teachers and pupils should learn to keep anecdotal records. This type of evaluation is particularly helpful in revealing the manner in which pupils apply that which has been learned about conservation in their everyday community living. Reports from parents concerning pupils' behavior at home are also useful as a means of evaluation.

Appraisal of Scope, Organization, Emphasis, Materials and Procedures in Soil and Water Conservation

Periodic and systematic provision ought to be made for educators and conservation experts to discuss critically the program of soil and water conservation education as it develops.

The state reports, given at the Region Workshop taken as a unit, might well serve as a status picture of 1945. A more complete survey of soil and water conservation education in each state, to fill the gaps in the present reports, might be desirable during the ensuing year, provided undue energy is not required.

The maintenance of a proper balance of soil and water conservation education with other phases of conservation education and general education may be ensured by periodic review and discussion. A place for this type of appraisal ought to be provided in next summer's workshop.

The opinions of teachers, who work on soil and water

conservation problems in the classroom with boys and girls, will always be a basic and fruitful source of critical opinion concerning the program. They should be drawn into active participation immediately. Grade placement of materials, activities and angles of approach may receive their most effective evaluation from those who have tried them in the classroom.

Section VII

SOME SUGGESTED PROCEDURES FOR IMPLEMENTING AN EDUCATIONAL PROGRAM IN SOIL AND WATER CONSERVATION

It is not to be expected that all who read this Report will agree with its point of view and suggestions in every detail. It seems likely, however, that there will be general unanimity among readers concerning the need for improving and expanding soil and water conservation education programs in our schools. Surely there are few areas of education which call for more careful thought or positive action at this time. Vigorous effort needs to be put forth by educational leaders to establish an adequate program. The following suggestions may be helpful in implementing such a program.

Suggestions to State Departments of Public Instruction

- (1) Distribute this Report among the educational leaders of the State. These should include city superintendents, officials in charge of programs in teacher-education institutions, state conservation commissions, heads of departments of vocational education, and leaders of organized groups for rural youth, such as 4-H Clubs and the Young Citizens' League. Accompany the Report with a letter which
 - a. urges a careful consideration of the Report.
 - b. invites the submission of proposals for effecting appropriate local educational programs in soil and water conservation in light of the suggestions included in the Report, and

- c. offers the assistance of the State Department of Public Instruction in planning appropriate soil and water conservation programs locally.
- (2) Urge state and local education associations, other teacher organizations, and county superintendents to give consideration to education in soil and water conservation when planning the programs for teachers' state conventions, county institutes and local teachers' meetings.
 - (3) Conduct regional educational conferences, in cooperation with one or more educational agencies in the state, to give special consideration to the establishment of soil and water conservation education programs in elementary and secondary schools.
 - (4) Urge faculties in teacher-education institutions to give special study to soil and water conservation with a view to its effective inclusion in the overall program and the incorporation of its various aspects in the several areas of the curricula. Also, cooperate with teacher-education institutions in organizing off-campus study centers and summer workshops on soil and water conservation education. In some states, an active organization of representatives of teacher-education institutions provides an effective group with which the state department can work.
 - (5) Ask the teacher association journals to disseminate information and suggestions regarding the establishment and conduct of educational programs in soil and water conservation.
 - (6) Urge county superintendents to study soil and water conservation with a view to assisting rural teachers in establishing and carrying on appropriate educational programs in soil and water conservation.
 - (7) Make provision in the state courses of study

for appropriate studies and procedures in soil and water conservation education on both the elementary and secondary levels. (In the absence of official courses of study for state-wide use, provide appropriate unit studies in conservation for elementary and secondary school pupils.)

Suggestions to Teacher-Education Institutions

- (1) Make it possible for your faculty to give careful thought and study to the problem of making the total teacher-education program more effective as it concerns education in the conservation of natural resources, particularly soil and water.
- (2) Encourage extension divisions to prepare or improve correspondence studies involving the conservation of soil and water. Lend every impetus also to the organization and conduct of off-campus study centers in which specific attention will be given to problems of soil and water conservation.
- (3) Urge those in charge of summer sessions to organize educational workshops in which teachers and administrators can prepare instructional materials on soil and water conservation.
- (4) Establish curriculum laboratories in the conservation of natural resources in which all available materials that are useful in soil and water conservation education can be brought together.
- (5) Formulate a list of significant problems in soil and water conservation education for graduate study and research; for example, the status of soil and water conservation education and the evaluation of materials.

Suggestions to National, State and Local Teachers Associations, Presidents of County or Regional Teachers' Organizations, and County Superintendents

- (1) Arrange for the programs of national, state and county teachers' institutes and conventions to give special consideration to the problem of implementing effective educational programs in soil and water conservation.
- (2) Disseminate information and suggestions regarding the establishment and conduct of educational programs in soil and water conservation through teacher association journals, bulletins, or other publications addressed to teachers.

Suggestions to the Soil Conservation Service

- (1) Since the Office of the Soil Conservation Service of Region 5 has published this Report in its present attractive and readable form, and since the Report contains a significant message concerning the welfare of our nation, it is urged that an adequate supply of copies be made available to State Departments of Public Instruction and other groups wishing to bring the message to the attention of educational leaders within their states.
- (2) The Office of the Soil Conservation Service for Region 5 is urged to call a meeting of representative educational leaders of the Northern Great Plains Region in the spring of 1946 to review achievements in soil and water conservation education, to draw up suggested plans for summer programs in teacher education, and to project other plans.
- (3) The National Office of the Soil Conservation Service is requested to consider the advisability of appointing a national advisory committee to guide the development of education in the conservation of soil and water.

- (4) The National Office of the Soil Conservation Service is urged to cooperate closely with the U. S. Office of Education. Although the Soil Conservation Service has no direct responsibilities for the educational programs of the schools and colleges, its leadership and service, and also that of other organizations with special interest in conservation, is needed in developing an adequate program of soil and water conservation education.

Appendix

RESOURCE AGENCIES FOR EDUCATION IN SOIL AND WATER CONSERVATION

NATIONAL GOVERNMENT AGENCIES

UNITED STATES DEPARTMENT OF AGRICULTURE,
WASHINGTON 25, D. C.

Office of Information, South Building,
Washington 25, D. C.:

This office handles all matters connected with publications of the Department of Agriculture. Through several series of technical and popular publications, it makes available information concerning food, results of research, conservation, and regulatory and service work of the Department. The publications pertain mostly to nationwide agricultural and soil conservation information, and include books, bulletins, charts, motion pictures, 2 x 2 slides, and film strips. In some cases material is also obtainable on individual states. Requests are channeled, whenever necessary, to specific agencies when state and local information is desired.

Soil Conservation Service, South Building,
Washington 25, D. C.:

This Service aids in bringing about desirable physical adjustments in land use with a view to bettering human welfare, conserving natural resources, establishing a permanent and balanced agriculture, reducing the hazards of floods and siltation, and maintaining the land's productive capacity for the future. The

Service promotes the application and use of soil and water conservation and utilization practices and erosion control practices through assistance in the form of technical material and equipment and aid to soil conservation districts organized under state laws and operated under farmer direction. Various published materials on soil conservation prepared by the Service are available to schools and colleges.

**Agricultural Adjustment Agency, South Building,
Washington 25, D. C.:**

The program of this Agency is directed primarily at helping farmers produce to meet national needs, while encouraging practices which will increase yields and conserve soil resources. Descriptive literature of such practices is made available to schools and colleges.

**Bureau of Agricultural Economics, South Building,
Washington 25, D. C.:**

This Bureau is the central statistical and research agency of the Department. It collects, analyzes, and publishes a wide variety of facts about agriculture. These include data on production, demand and supply consumption, prices, costs, income, marketing, transportation, labor, agricultural finance, farm management, credit, taxation, land and water utilization, and other aspects of agricultural production and distribution.

**Extension Service, South Building,
Washington 25, D. C.**

This Service cooperates with State land-grant colleges

in the conduct of extension work in agriculture and home economics. It coordinates the extension activities of the bureaus and offices of the Department, with similar work carried on by land-grant colleges. The functions of the Extension Service are educational. An administrative and subject-matter staff headed by the State director of extension work is located at each land-grant college, and county extension agents are located in nearly all agricultural counties. This Service makes available to farmers, farm homemakers, rural youth, and schools and colleges the results of research conducted by the Department, the land-grant institutions, and other research institutions and research agencies. The county agents serve as an educational field force for the various action and credit agencies of the Department.

**Forest Service, South Building,
Washington 25, D. C.:**

The Forest Service is charged with the responsibility of promoting the conservation and best use of the Nation's forest lands. It improves them, protects them from fire, insects, and disease, and manages their resources for orderly and continuous service. Information concerning the activities of the Forest Service is available.

**FEDERAL SECURITY AGENCY,
WASHINGTON 25, D. C.**

**U.S. Office of Education, 26th Street and Constitution
Avenue, N. W., Washington, D. C.:**

This Office is charged with responsibilities including

the collecting of statistics and facts as shall show the condition and progress of education in the several states, and of diffusing such information respecting the organization and management of schools and school systems, and methods of teaching. Obtainable from this Office are education materials on soil and water conservation on a national basis and educational conference reports on soil conservation in general education. It administers the acts for the promotion of vocational education, including agricultural, trade and industrial, home economics and business education.

DEPARTMENT OF COMMERCE,
WASHINGTON, D. C.

Weather Bureau:

This Bureau operates the basic national (synoptic) system of meteorological observations for the United States, collects and analyzes these observations, and prepares weather forecasts and warnings, bulletins, and climatological summaries for the use of other branches of the Government, including the military and naval services, and for the benefit of air transport, agriculture, business, commerce, industry, shipping, and other national interests.

DEPARTMENT OF THE INTERIOR,
WASHINGTON, D. C.

Division of Information, C Street between 18th & 19th,
N. W., Washington 25, D. C.:

This Division prepares and distributes information touching upon all Departmental activities, and acts as a clearing house for all public information originating in the various bureaus of the Department, such as

the Bureau of Reclamation, Grazing Service, Fish and Wildlife Service, and Office of Land Utilization, which may have information on soil and water conservation.

OTHER NATIONAL AGENCIES AND ORGANIZATIONS DIRECTLY OR INDIRECTLY CONCERNED WITH SOIL AND WATER CONSERVATION

National Youth Agencies:

4-H National Soil Conservation Programs, U. S. Extension Service, South Building, Washington 25, D. C.

Future Farmers of America, 26th Street and Constitution Avenue, N. W., Washington, D. C.

Camp Fire Girls, Inc., 88 Lexington Avenue, New York 16, N. Y.

Boy Scouts of America, 2 Park Avenue, New York 16, N. Y.

Girl Scouts, Inc., 155 East 44th Street, New York 17, N. Y.

National Council of Y.M.C.A. of the U. S., 347 Madison Avenue, New York 17, N. Y.

National Board of Y.W.C.A., 600 Lexington Avenue, New York 22, N. Y.

Young Citizens League, Pierre, South Dakota.

National Farmer Organizations

American Farm Bureau Federation, 58 East Washington Street, Chicago 2, Ill.

National Grange of the Patrons of Husbandry, 744 Jackson Place, N. W., Washington, D. C.

National Farmers Union, 1441 Welton Street, Denver, Colo.

National Commercial Interests

Farm Implement Manufactures:

Bulletins, moving pictures, charts and slides are available for school use upon request to the Advertising Department, General Office of a majority of these companies. Addresses may be obtained by contacting local dealers.

Railroads:

Many railroads are taking an active part in soil conservation education. Bulletins and films are available from many. Local agent will furnish appropriate address.

Chamber of Commerce of the United States, 1615 H St., N. W., Washington 6, D. C.

American Bankers Association, 22 East 40th Street, New York 16, N. Y.

Other National Agencies

National Education Association, 1201 - 16th St., N.W., Washington, D. C.

Friends of the Land, One South 4th Street, Columbus 15, Ohio.

Soil Conservation Association of America, Box 671, Portland, Oregon.

National Wildlife Federation, Inc., 1212 - 16th St., N. W., Washington, D. C.

Ducks Unlimited, 342 Madison Avenue, New York 17, N.Y.

National Audubon Society, 1006 Fifth Avenue, New York 28, N. Y.

Izaak Walton League of America, Inc., LaSalle Hotel, Chicago, Ill.

REGIONAL GOVERNMENT AGENCIES

Soil Conservation Service, Box 713, Lincoln, Nebraska.

Farm Security Administration, Lincoln, Nebraska, and Denver, Colorado.

Bureau of Agricultural Economics, Lincoln, Nebraska.

Grazing Service, Billings, Montana.

Bureau of Reclamation, Denver, Colorado.

U.S.D.A. Branch Library, Box 713, Lincoln, Nebraska.

Forest Service, Denver, Colorado, and Missoula, Mont.

STATE AGENCIES

State Soil Conservation Committee

State Department of Agriculture

Soil Conservation Service

Farm Security Administration

State Agricultural Colleges and Universities

Teacher Training Colleges

Extension Service

Experiment and Research Stations

State Game, Wildlife, Fish, etc., Commissions

Agricultural Adjustment Agency

State Education Association

State Department of Education

State Fair Boards - Exhibit Departments

State Soil Conservation and Survey Division

Motion Picture Depository - generally located at the University or State Department of Education

DISTRICT, COUNTY AND CITY AGENCIES

County Agricultural Agent

The Office of the County Agent makes available educational resources of the following nature:

1. Demonstrations, tours
2. Bulletins
3. Speakers
4. Films, slides, film strips
5. Posters
6. Exhibits
7. County Land Use Planning Reports

Soil Conservation Districts

Educational resources available from soil conservation district offices include the following:

1. Speakers
2. Demonstrations and tours in cooperation with County Agent
3. Motion picture films, slides and film strips
4. Posters
5. Exhibits
6. Picture enlargements
7. Radio programs and transcriptions
8. Manuals, books, outlines, reports
9. Soil conservation district programs and work plans
10. Bulletins
11. Magazines

12. Land use capability maps

County Superintendent Of Schools

Some of the resources made available to the schools include:

1. Representative material and lists of sources of materials relating to soil and water conservation
2. Teaching guides and units
3. Outlines
4. Exhibits and project information

Other Local Resource Agencies

Numerous other local organizations and agencies provide resources of value in soil and water conservation. Included among them are:

1. Wildlife conservation officials
2. Libraries
3. Museums