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The soil conservation service—Its basis of co-operation with landowners

By G. W. Spencer and J. E. Watson*

The Soil Conservation Act of 1945 set up within the Department of Agriculture a Soil Conservation Service under the control of a Commissioner of Soil Conservation. The Service aims to promote types of land use which will conserve the soil and prevent or overcome soil erosion. It also aims to educate landholders and the public generally in the aims and practice of soil conservation. This article relates mainly to farm land activities, and in particular the co-operation of the Service with individual primary producer landholders for the prevention and control of erosion on their land.

The major functions of the Soil Conservation Service are—

- To investigate the extent of soil erosion and the design of preventive and remedial measures.
- To inform the community about the need for soil conservation.
- To advise, instruct and supervise landholders in reclamation and soil conservation works.
- To carry out soil conservation research.
- To co-ordinate the work of Government departments and public authorities in soil conservation and the use of Crown lands.

These functions are detailed in the Soil Conservation Act. (The Soil Conservation Act also gives wide powers to control land use which is causing a soil erosion problem, but the Commissioner can exercise these powers only after efforts to achieve co-operation have failed.)

In carrying out its functions and in avoiding as much as possible the use of compulsive powers, the keynote of the Service’s work is co-operation. To achieve soil conservation it is necessary for every landholder to plan his land use in the context of a fundamental conservation philosophy, and for all associated with primary industries to hold the same philosophy.

The Soil Conservation Service is one of four branches of the Soils Division of the Department of Agriculture (the others are Rangeland Management, Irrigation and Drainage and Soil Research and Survey). The office of Commissioner of Soil Conservation is held by the Chief of Soils Division and this results in a high level of co-ordination between the activities of the branches, all of which are largely concerned with the physical aspects of land use. Co-operation with other divisions of the Department of Agriculture is also of vital importance. It is logical that the Soil

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Conservation Service should be a branch of the Department of Agriculture because the most widespread erosion problems in Western Australia are on farming and pastoral land; also, many non-farm erosion problems are best solved by establishment of vegetation.

**SOIL EROSION PROBLEMS IN WESTERN AUSTRALIA**

Some of the problems related to soil erosion are:
- loss of soil fertility and consequent loss of production;
- deteriorating soil structure of cultivated land, making soils less receptive to rainfall and more difficult to cultivate;
- denudation of natural grazing areas (on a wide scale in the pastoral areas or on pockets of non-arable land in the cereal growing areas). The loss of the protective cover of vegetation exposes the surface soil to the erosive forces of wind and water;
- removal of surface soil by wind and water action;
- washing out of gullies in drainage lines, on slopes generally, or down tracks, firebreaks or stock paths;
- damage to public roads by water and soil washing from farmland or from mining, industrial and public utility areas;
- silting up of culverts, creeks and rivers;
- excess runoff of rainfall from eroded land, contributing to flooding of lower lands, roads, railways and towns;
- sand drift from farmland onto other farms, fences and roads;
- sand drift from unstable coastal dunes.

Soil Conservation Service activities in association with individual landholders have been largely in the cereal growing areas because many of the problems listed above become increasingly severe with increasing cultivation.

**RESPONSIBILITY FOR SOIL CONSERVATION**

The Soil Conservation Service developed its operations in accordance with the basic concept that each landholder is responsible for maintaining the soil resources of his own property and for preventing the products of soil erosion (water-borne sediments and wind-drifted sand) from causing damage to adjoining lands.

Soil conservation is basically good soil management in which each piece of land is used according to its capabilities and disabilities. Many erosion problems are caused by attempting to force land to produce beyond its capabilities, by soil management that exposes land to excessive erosion risk, or by failing to accept restricted land use for areas with inherent disabilities.

The Service's educational activities are intended to increase landholders' awareness of erosion hazards, of desirable management techniques and of special practices which help prevent and control erosion. At the same time, the landholder has a responsibility to make an effort to improve his conservation management knowledge and capabilities.

**ADVISORY AND TECHNICAL SERVICES FOR FARMERS**

Through the Soil Conservation Service the Government makes provision for landholders to obtain on-farm advisory and technical services to help conserve the State's land resources.

Farm visits by soil conservation officers are costly, however, and the salaries and other costs for this service constitute a major part of the Branch's annual budget.

While landholders are expected to attempt to solve their own problems or seek verbal advice from
district offices of the Department of Agriculture, soil conservation advice often requires a personal inspection of the land, and for this reason soil conservation officers make many farm visits. Such visits are more effective for farmers who have adopted a self-help attitude to conservation education and practice.

Requests for advice and technical services can be made by letter, telephone or personal call to the District Soil Conservation Adviser. A farmer who is not certain which District Office to contact should write to the Department of Agriculture, Jarrah Road, South Perth and the request will be sent forward.

Conservation farm planning
A service which many farmers have accepted as a valuable aid to farm management is the preparation of a soil conservation farm plan for a property. The plan can be either for the initial development planning of a new land allocation, or for the re-planning of an older developed property. It takes into account erosion control needs, fencing subdivisions, access and farm water supplies based on and co-ordinated with topography and the problems and land use capabilities of the soils of the farm.

The conservation farm plan is developed by the soil conservation officer in consultation with the farmer, whose intimate knowledge of the property ensures that the plan is consistent with his management policies. The farm planning field work visit is thus a very thorough advisory visit covering all those aspects of land use and farm layout which affect soil and water conservation.

The farmer is not committed to applying the plan in accordance with any set schedule, but such a plan provides a conservation basis for his year-to-year planning of any re-fencing and erosion control works. The plan should also increase the efficiency of any follow-up advisory or technical visits.

When a farm plan is requested the farmer is required to supply stereoscopic aerial photographic coverage of the property to assist with topographic assessment, and an air photo enlargement to be used as a base map. These can be obtained from the Lands and Surveys Department at moderate cost.

The soil conservation officer can assist in preparing the order for the required photos. It is also strongly recommended that in preparation for the farm planning visit the farmer should purchase and study the Department of Agriculture “Soil Conservation” and “Water Conservation” handbooks.

Contour farming and water control works
Contour practices are widely accepted for the control and prevention of water erosion and for some aspects of farm water conservation. Advice on the adoption of contour farming methods is part of the advisory service provided by the Department of Agriculture. This advice may include instruction in the use of contour surveying equipment, detailed discussion of contouring requirements of a particular area and instruction in earthmoving methods for gully filling and contour bank construction.

After the farmer and soil conservationist agree on what is needed it becomes the farmers’ responsibility to carry out or arrange for necessary contour surveys, gully filling and construction of contour banks and other structures.

Soil Conservation Service advisory districts.

Surveys
Many farmers have successfully designed and surveyed their own
contour bank systems. For those who wish to undertake “self-help” contouring a soil conservation officer can give advice on planning the work and instruction in the use of a levelling device. The Department of Agriculture “Soil Conservation Handbook” is essential reading for “self-help” contour surveyors.

The farmer may request that the surveying be done by the Soil Conservation Service. Normally only one officer is available and as two persons are necessary for a survey team the farmer provides an assistant. The soil conservation officer has pegs for pegging out the contour line (usually at 20 metre intervals) but the farmer is required to mark the lines with tractor and cultivating implement so that the pegs can be retrieved. It is also desirable that the farmer should provide about 20 or 30 stakes to accurately mark the end points of bank lines.

Earthmoving
A farmer may carry out any necessary earthmoving with his own plant or engage a contractor for some or all of the work. Excellent contour banks can be built with a farm tractor and disc plough, and quite large gullies may be filled by such equipment. Farm tractors fitted with dozer blades are useful for contour bank construction and gully filling, and for reinforcement and maintenance of work constructed by other machinery.

Many shire councils hire out their road graders (and sometimes bulldozers) for erosion control earthworks on farms. The charges vary, and rates are reduced by some councils which believe that the elimination of erosion gullies and the slowing down and reduction of runoff water can greatly reduce road damage from water action and sedimentation. Private contractors have also been employed for much soil conservation earthmoving.

Free bulletins describing the construction of contour banks by road grader and by tractor and disc plough are available, and these subjects are also covered in detail in the “Soil Conservation Handbook.”

Some points to note
- Any soil conservation project can only be fully effective if the farmer accepts the need for, and makes conservation-orientated changes in his farming practices. He should also ensure that erosion control works are properly constructed and are maintained in good condition.

The success of the project may also depend on restricted land use such as non-cultivation of waterways.
- It should be clearly understood that the Department provides a soil conservation service—not a contouring service. Contouring must not be used to bolster an unsatisfactory soil management system. Officers may advise against and decline to assist with the use of contour banks where soil deterioration is obvious and not being corrected by changes in land use.
- It must also be stressed that soil conservation officers cannot be involved in any project which solves one farmer’s problem at the expense of passing the problem on to another landholder or authority. Contour banks must not be used to divert surplus water on to a neighbouring farm or road or railway reserve.

Full technical details on soil and water conservation are available in the Department of Agriculture’s Soil Conservation and Water Conservation Handbooks. These may be purchased from any office of the Department at a cost of $2.00 per copy.

A plough-built contour bank. The bank was constructed by the farmer using his own disc plough.