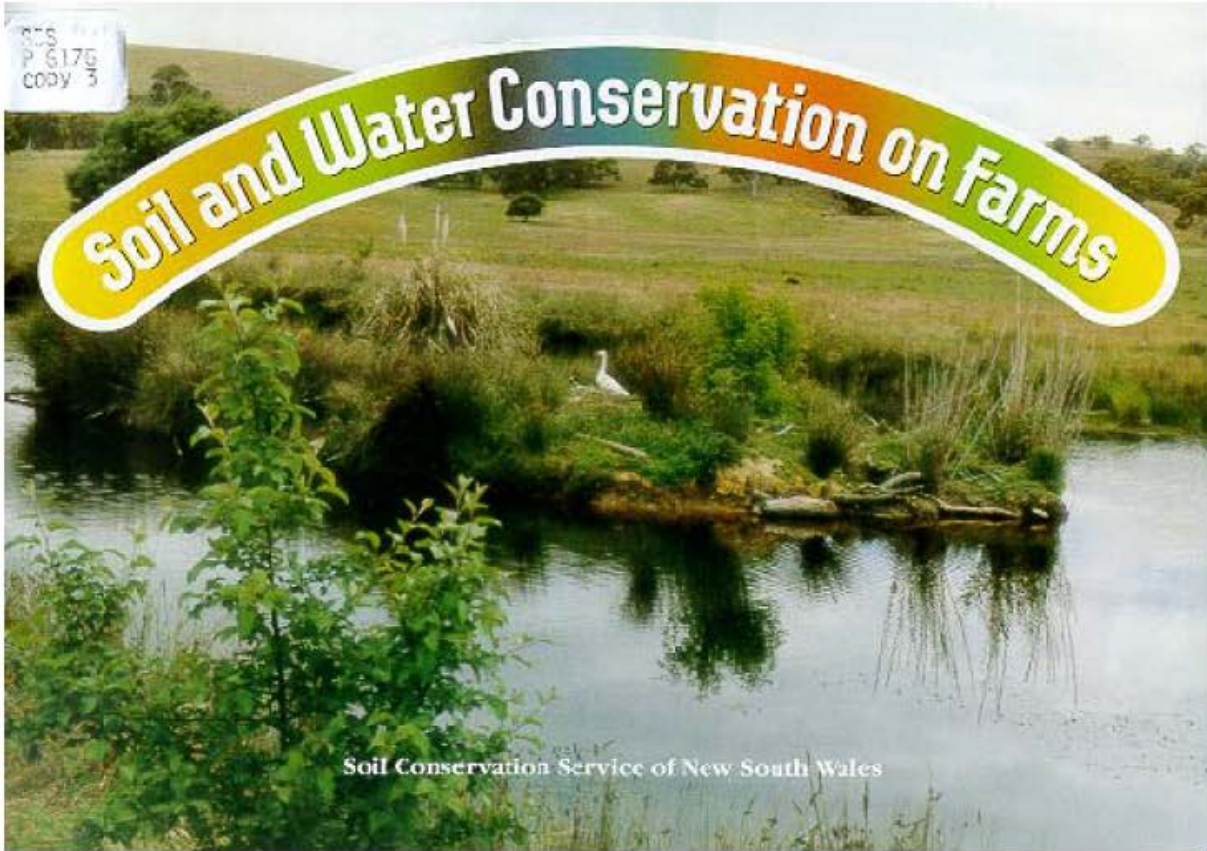


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Soil and Water Conservation on Farms



Soil Conservation Service of New South Wales

LAND DEGRADATION

Loss of productivity due to land degradation is a serious problem facing landholders. Land degradation can take many forms and most of these also result in a decline in runoff water quality. Some of the more common forms in New South Wales include wind erosion, water erosion, soil salinity, soil acidity and soil structural decline. Careful land management, involving the conservation of soil and water resources, is needed to control land degradation while maintaining the productivity of the land. The Soil Conservation Service is able to help landholders achieve this balance by providing advice and assistance on ways to make productive use of soil and water resources — and time and money — without abusing those resources or creating problems for surrounding landholders.

THE WHOLE FARM PLANNING APPROACH

The whole farm planning approach, so essential to successful land management,



includes practices such as the following:

- Developing a *farm plan* which is designed around the existing physical characteristics (both constraints and opportunities) of the property. Farm plans are a blueprint for development on a farm. They address optimum paddock layout, necessary soil conservation works and management practices, optimum location of water points, windbreaks, stands of trees

Uncontrolled water flowing across

farmland leads to soil erosion and other forms of property damage.

The Service can assist farmers in planning the control and

management of surface

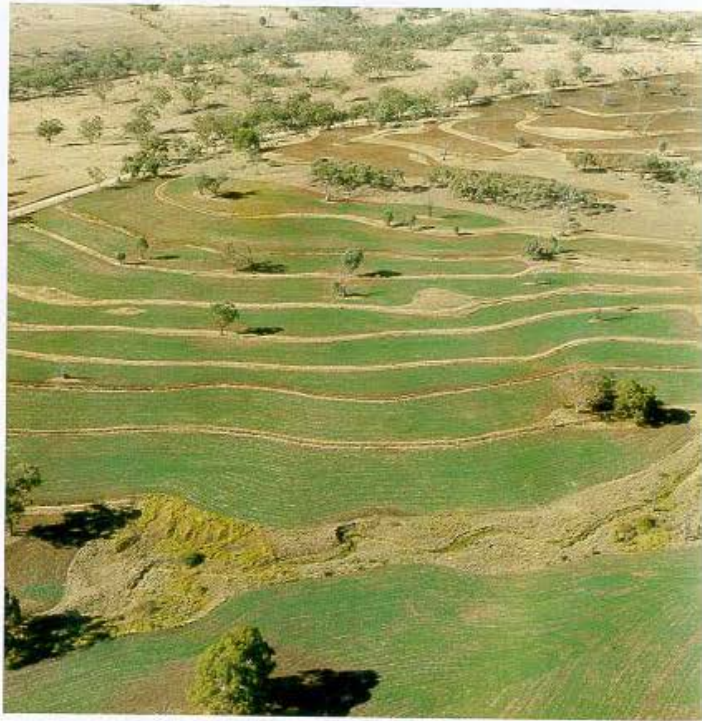
runoff to maximise its use and minimise

adverse effects.

and any other features that improve the land stability and the productivity of the farm. The entire farm plan focuses on land use within its capability. This is determined by the characteristics of the land and the extent to which these will limit a particular type of land use given the technology that is currently available for the management of the land.

- *Reducing soil erosion* so that the productive capacity of the soil is not lowered. This may involve structural works such as banks and waterways, designed to allow excess runoff water to flow from paddocks without causing erosion. Soil erosion may also be reduced through management practices such as strip cropping, conservation tillage, adequate crop rotation,

Banks and waterways control the flow of water from paddocks and so reduce erosion.



contour ripping, suitable stocking rates, vermin destruction, fire prevention and vegetation management.

- Ensuring proper location of *farm dams and watering points* for most efficient use of water for stock and domestic purposes and for erosion control. Water conservation and proper distribution of watering points are essential facets of farm management.

- Incorporating *cropping practices* such as conservation tillage into the farm management program, to ensure that soil structure, organic matter content and moisture infiltration capacity remain

favourable for plant growth.

- Attention to *stocking rates* and grazing management practices to ensure that vulnerable areas do not suffer from intensive grazing pressure.

Vegetation is retained on the soil in a no-till farming system. This protects the soil from erosion and maintains good soil structure.



Trees act as windbreaks as well as providing habitats for wildlife. Similarly, dams can provide water and assist in soil conservation as well as acting as a habitat for waterbirds.
Photo: National Parks and Wildlife Service

- The establishment of *trees* throughout the farm to provide windbreaks and for wildlife habitat, streambank protection, erosion control and aesthetic purposes.
- Retaining or creating areas for *wildlife habitat* such as wildlife islands in farm dams and stands of trees.

The reed-warbler makes its nest in reeds surrounding dams and in swampy areas.
Photo: Philip Green



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AN ADDITIONAL SERVICE TO LANDHOLDERS — WATER CONSERVATION

The Service can assist landholders to develop a whole farm planning approach more effectively than ever before. This is possible because of the greater range of expertise now available within the Service. As well as officers experienced in all areas of

soil conservation, the Service has staff with a background in farm water management, including surface water flow management, development of farm water reticulation

schemes and all aspects of farm dam construction. The Service provides landholders with an integrated soil and water conservation and management package.

Service staff are available to design farm dams and farm water reticulation schemes for erosion control, property drought proofing and stock and domestic water supply. Photo: Department of Water Resources



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The Service has broadened its range of activities to include the conservation of on-farm water resources. The activities that the Service undertakes in the field of water conservation now include the following:

- Assessment of opportunities for the development of the water resources of a farm. This involves the complete survey, design, supervision and construction of farm dams including preparation of strategies for water harvesting, drought proofing of properties and multi-purpose use of farm water.
- Design and planning of farm water reticulation schemes, including a bore if necessary, for stock and domestic water supply.

Reticulation schemes for stock water supply can be designed by the Service.

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- Advice and assistance on the management and control of surface water flow on farms, including the design of soil and water conservation works ranging from waterways and flood routing to gully head stabilisation works.
- Integration of water conservation proposals, surface water management options and water reticulation schemes into farm plans.
- Undertaking of integrated catchment modelling to determine the most cost effective measures to control sediment movement and provide stability.

This is in addition to the assistance to landholders traditionally provided by the Soil Conservation Service which includes:

- organising whole valley soil conservation projects where the entire community of a small catchment enters into an agreement with the Service to treat erosion on a co-ordinated basis.
- providing practical yet detailed advice and assistance on the control of soil erosion and land degradation on individual landholdings, incorporating:
 - farm planning
 - bank systems
 - dams to control erosion
 - flumes and waterways
 - land management practices
 - tillage practices
 - strip cropping layout
 - tree planting to prevent erosion.
- hiring of specialised equipment to land users to enable soil conservation works to be constructed.



Farm dams can assist in erosion control as well as providing water for the farm. Photo: Department of Water Resources

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Strip cropping
 conserves soil by
 spreading runoff and
 reducing its capacity to
 move soil.

- administering financial assistance and subsidy schemes to assist eligible landholders to carry out essential soil conservation works.
- investigating particular soil degradation problems and providing practical solutions to field problems.
- advising on streambank erosion control and streambank management in streams with catchments of less than 50,000 ha, which lack water regulatory structures and are not included as a flood plain under Part VIII of the Water Act.
- disseminating technical and popular information on soils, land use, land capability, land degradation and soil conservation to researchers, land users, other government departments and the community generally.

The additional farm water supplies skills are fully integrated into the Service's existing framework. Soil conservationists and engineering staff are available to visit properties to advise on soil erosion control; to assess potential available water supplies; to advise and, if necessary, provide detailed plans and reports on proposals including earthworks and water reticulation; and to provide assistance to ensure maximum benefit from existing works and schemes.



The Service holds field
 days on all matters
 relating to soil
 conservation.

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NEW SERVICES AVAILABLE TO LANDHOLDERS

ASSESSMENT

Staff will be able to visit properties and conduct field investigations to assess available water

- Examination of surface streams, earth dam sites and capacities and rainwater storages to enable the establishment of a reliable farm water supply.
- Assessment of water requirements for stock and domestic use.
- Investigation into ways of increasing the efficiency and reliability of your existing scheme.
- Discussion of alternative methods that are available to meet your water needs.

ADVICE

Land users can obtain verbal and written advice on farm water proposals

- Confirmation in writing if required of investigations which have been carried out. Detailed plans are available upon payment of a fee.
- Comparative costs of systems and power units.
- Investigations of capacity and earthworks for: dams, excavated tanks, off-river and recirculation storages and channels.
- Investigations into meeting water needs for stock and domestic purposes, including the provision of recommended sizes of: pumps and pipes, dams, excavated tanks and storage tanks.

ASSISTANCE

The Service can provide assistance with existing farm water schemes and works

- Provision of advice on pumping rates, pipelines and storage capacities of stock and domestic schemes.
- Recommendations for upgrading existing stock and water supply systems.
- Soil examinations with recommendations for the compaction and construction of embankments for dams.
- Calculation of existing capacities, and of earthworks needed for either desilting or enlarging dams.

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PLANT HIRE SCHEME

The Soil Conservation Service's Plant Hire Scheme enables a landholder to hire suitable machinery with experienced operators to construct works designed by the Service. Soil conservationists and engineering staff are available to assist landholders with design, lay out and checking of works. This scheme is available for farm water supply and water conservation earthworks as well as for traditional erosion control works.

ADVANCES SCHEME

An Advances Scheme is available to assist landholders implement soil erosion control work and water conservation schemes. The

scheme is administered by the State Bank and is designed to encourage the implementation of soil and water conservation on properties where the owners may have difficulty in obtaining finance from normal lending sources.

An advance may be sought for structural earthworks or land management works as well as for farm water reticulation schemes and associated works such as pipes and tanks. Structural earthworks include banks, waterways, flumes, gully control works, gully filling, gully shaping, contour ripping, chisel ploughing and farm dams for water supply. Land management works include subdivision fencing, pasture improvement and tree planting.

The Plant Hire Scheme can be used by landholders to build earthworks included in the farm plan.



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