A DRAFT STRATEGY PLAN FOR AGROFORESTRY

as part of the

Year and Decade of Land-care

by the

National Agroforestry Working Group

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PREFACE

This draft has been submitted to the Standing Committee on Agriculture and the Standing Committee on Forestry for their endorsement.

INTRODUCTION

This strategy plan outlines the role of agroforestry in the "Year and Decade of Land-care". Trees on farms are recognised to be a vital element in the control of soil erosion, nutrient loss and salinity. For this reason, the Australian Forestry Council had asked the National Agroforestry Working Group (NAWG) to develop a strategy to promote trees on farms as an integral part of the national soil conservation initiative. As a first step the NAWG prepared a report for the Standing Committee on Forestry and the Standing Committee on Agriculture in June 1989. In that report, NAWG indicated its wholehearted support for the "Year and Decade of Land-care". This strategy plan sets out how NAWG and state agroforestry committees can assist the Department of Primary Industries and Energy in implementing its initiative.

The plan is divided into three sections. Section A is an executive summary. The role of agroforestry is explained briefly in Section B. Section C outlines a strategy plan for agroforestry as an integral part of the soil conservation initiative.

Throughout the plan the terms "agroforestry" and "trees on farms" are used synonymously.

SECTION A

Executive Summary

Agroforestry has been recognised in this document as the deliberate integration of tree growing within normal farming practices and is seen as a vital element in land-care proposals in Australia.

There are several alternative approaches to agroforestry that might be employed by farmers including:-

1. widely-spaced trees for timber with pasture for grazing
2. shelterbelts managed for erosion control, shelter and timber
3. woodlots managed for timber production, plus control of salinity and loss of nutrients
4. revegetation of degraded areas, and
5. trees and shrubs for fodder and salinity control

A strategy plan has been developed which aims to place agroforestry high on the national agenda for land-care. The essential elements of this plan are as follows:-

1. Agroforestry representation is required on State Steering Committees set up for the "Year and Decade of Land-care".
2. These representatives (1) to provide the agroforestry component to state action plans.
3. Members of NAWG and state agroforestry working groups to assist with publicity for the "Year of Decade and Land-care".
4. NAWG to review existing agroforestry research and demonstrations and to encourage new research and demonstrations where necessary.
5. State agroforestry working groups to translate the latest findings about agroforestry into practical information for advisors and farmers.
6. Information on agroforestry needs to be incorporated into whole-farm planning. Training of agroforestry advisers and farm planners in each others field is needed to improve integration of skills.
7. Examples of agroforestry need to be established to treat notable areas of land degradation and for use in extension and staff training.

8. A strengthening of advisory services is required to translate the soil conservation initiative into action on the ground.

9. NAWG and state agroforestry working groups to establish in-service courses on agroforestry.

10. Tertiary institutions to be encouraged to introduce agroforestry courses.

11. All states should establish inter-agency agroforestry groups to co-ordinate and monitor research and extension activities.

12. Much of this strategy plan can be carried out by NAWG through its members in each state. However, further resources are required to strengthen advisory services.

SECTION B

The Role of Agroforestry

The purpose of this section is to outline the role and scope of agroforestry in land-care. That is, what it is and what it can do.

Agroforestry, or the integration of trees within normal farming practice is seen as a vital element in soil conservation, particularly in the control of soil erosion, nutrient loss and salinity. In addition, trees provide other benefits such as shelter for stock and crops, habitat for wildlife and an increased value of farms. There are methods by which trees can be deliberately integrated with farming to combat land degradation. They include:-

(i) Widely-spaced trees for timber with pasture for grazing.

The combination of widely-spaced trees for timber and pasture for grazing or cropping has been extensively studied in Australia and New Zealand. It has been found to be profitable and practicable. The total value of production of timber and agricultural commodities often exceed the levels associated with traditional forestry or farming alone.

PLATE 1: Widely-spaced radiata pine at a demonstration area near Busselton, Western Australia.

The combination of widely-spaced trees and pasture has been shown to lower ground water-tables, thereby alleviating salinity and water logging. The wide spacing of trees enables farmers to obtain an income from the land while the trees are growing. Furthermore shelter is provided for stock. This type of agroforestry has been intensively researched and now needs to be developed and evaluated on a large scale, particularly where controlling salinity is an important objective.

(ii) Managed shelterbelts

Properly designed and managed shelterbelts control the erosion of soil and provide shelter for stock and crops.
There is also some potential to produce saleable timber, fodder and other products, eg. honey, from managed shelterbelts.

PLATE 2: A shelterbelt of pine trees on light sandy soil near Esperance, Western Australia, to control wind erosion and to provide shelter.

(iii) Strategically placed woodlots

Producing a commercial crop of timber as well as improving water quality can be achieved by the careful siting of plantations on farmland. An example of this type of agroforestry comes from Western Australia, where plantations of *Eucalyptus globulus* (Tasmanian Blue Gum) are being grown for paper pulp and also for control of salinity and eutrophication of run off water.

PLATE 3: A woodlot of *Eucalyptus globulus* on farmland. Such plantings can produce a commercial crop of timber as well as helping to control salinity and eutrophication

The trees lower ground water-tables, thereby helping to control salinity. They also take up nutrients and thus assist with alleviating the problem of eutrophication in water bodies. After 8 - 12 years the trees can be harvested for a commercial crop of timber. The site can then be either replanted or managed for coppice re-growth, depending on the species.

(iv) Revegetation of degraded land

An alternative approach is to fence off degraded areas and either plant trees or allow vegetation to regenerate naturally. A revegetated area around a salty drainage line (as in the photograph below) can help to alleviate salinity as well as improving aesthetics and providing habitat for wildlife. Trees and shrubs can also help to stabilize eroding areas. Once areas have regenerated there is scope to graze carefully. This can reduce the fire hazard and make use of salt tolerant grasses and shrubs.

PLATE 4: Trees planted on and adjacent to salt affected land.

(v) Trees and shrubs for fodder and salinity control

In drier areas where timber production is usually not feasible there is scope for planting fodder trees and shrubs. Livestock utilise the foliage, fruit or seed, and the deep roots assist with the lowering of saline water tables. Fodder trees and shrubs also provide shelter for stock and crops and help to control soil erosion.

PLATE 5: Tagasaste (*Chaemecytisus palmensis*) planted in the catchment of the Collie River, Western Australia, for fodder and salinity control.

SECTION C

A STRATEGY PLAN FOR AGROFORESTRY

1. Planning and Co-ordination

(i) State agroforestry co-ordinator

Each State Steering Committee set up for the "Year and Decade of Land-care" should include an agroforestry co-ordinator.

The state agroforestry co-ordinator would:-

- provide agroforestry representation on the State Steering Committee
- co-ordinate trees on farms activities arising from the initiative
- liaise with community groups and Government agencies
- liaise with the Commonwealth and other states over national elements of the initiative including publicity about agroforestry
- facilitate applications for funding via NSCP and other sources

(ii) Action plans

One of the main functions of the State Steering Committees is to produce a state plan of action for the soil conservation initiative.

The individual state agroforestry working groups, through their agroforestry co-ordinators, can provide the agroforestry component to the state action plan.

(iii) Whole-farm planning

Expert agroforestry advice should be incorporated into the whole-farm planning process when developing strategies with farmers to tackle soil conservation problems.

Agroforestry is seen as one strategy which needs to be used in conjunction with other strategies, such as appropriate cultural practices and grazing management, to tackle soil conservation problems. The whole-farm planning process is a suitable technique to draw the various strategies together into a plan. It is essential that community groups are involved in developing catchment and whole-farm plans as a sound basis for work in the field. It is also important to work through community groups when providing advice on agroforestry to landowners.

Farm planners need to be trained in agroforestry subjects relevant to their geographic area. Similarly, agroforestry advisers need training in whole-farm planning. This will allow better integration of advice.

(iv) **Publicity**

State agroforestry working groups can assist with publicity for the "Year and Decade of Land-care".

A list of agroforestry case studies suitable for use in publicising the initiative has been sent to the Department of Primary Industries and Energy. Agroforestry working groups can co-ordinate and review media material prepared from the case study list. They can publicise the work of advisory staff, consultants, farmers and agroforestry research staff and generally act as expert commentators to the media.

(v) **State agroforestry committees**

Agroforestry committees have been established in some states and provide a framework for promoting research and extension. All states should establish inter-agency agroforestry groups to co-ordinate and monitor research and extension activities.

Each state agroforestry group shall have "Trees for land-care" as an integral part of their program for the "Year and Decade of Land-Care".

■ 2. Research

(i) **Monitoring established experiments**

Monitoring of established agroforestry experiments will continue so that further data about the integration of trees with farming are obtained. Information on the effects of trees on agricultural productivity, is needed so that farmers can assess the short and long term costs and returns of using trees to combat land degradation.

(ii) **Review of existing research**

Existing agroforestry research by both Government and farmers, is to be reviewed to produce up-to-date information about agroforestry for the soil conservation initiative.

The National Agroforestry Working Group will co-ordinate the review.

The latest findings about trees on farms would then be available for use by advisers. The views of advisers, farmers amd community groups, on the role of trees on farms and information wanted, would be sought in the review. Such information would help guide the direction of further agroforestry research.

(iii) New research

A broadening of agroforestry research would strengthen the base upon which more sustainable methods of farming are developed.

Aspects of agroforestry which require more research include:-

- the shelter belt system of agroforestry to control erosion of soil and to shelter stock and crops. For example, evaluate tree species for specific sites and measure effect of shelterbelts on agricultural production
- the evaluation of tree genetic material and management regimes in drier areas to combat salinity and erosion of soil by wind, and to provide other agricultural or wood production benefits
- the effect of trees on water-table levels in order to combat salinity
- further evaluation of tree species compatible with pasture production
- use of high value timber species

It would also be very worthwhile to monitor some agroforestry work set up by farmers.

3. Extension

(i) Demonstrations

Demonstrations of agroforestry should be established on farms on a regional basis, to treat notable areas of land degradation. Examples of agroforestry need to be incorporated into demonstration farms as part of a whole-farm plan. These areas are to be used in extension and education. The combination of widely-spaced trees and pasture is a type of agroforestry which needs to be evaluated on a large scale.

Demonstrations should be established through local land- care committees, private organisations and companies who have been working on rural tree planting and land degradation control. The review of existing research projects, mentioned earlier, would identify priorities.

Existing research and development projects would be examined for their suitability in training staff and for "open days".

(ii) Advisory services

A strengthening of advisory services is required to meet the current and expected increase in demand for advice about trees on farms. The Land-care initiative is expected to increase the demand for tree information even further.

In-service training courses, for agriculturalists, foresters, soil conservationists, and hydrologists working in Government departments, universities and the private sector, would help. Some reallocation of staff in both forestry and agricultural agencies may be necessary. In addition, a tree data base is required to provide information on the tree species selection and management for particular soil/climatic/degradation situations.

(iii) Publications

The latest research findings need to be translated into practical information for advisers and farmers.

There also needs to be strong co-ordination between government and non-government agencies in all extension activities connected with agroforestry; training, advising and preparation of publications. Furthermore the distribution of whole-farm planning and agroforestry publications needs to be co-ordinated between agencies and states. The National Agroforestry Working Group can assist in this way.

(iv) National Agroforestry Conference

A National Agroforestry Conference is proposed for 1992 to provide a focus for those interested in the technical developments which support the soil conservation initiative. The conference, which would be organized by the National Agroforestry Working Group, will be aimed at policy makers, researchers, economists, consultants and advisors. It will:

- support the Year and Decade of Land-care
- focus on the challenges set by the soil conservation initiative
- consider policy issues on agroforestry in land-care programs
- draw on international contributions (for example, from the International Council for Research in Agroforestry) where they are likely to assist the goals of the soil conservation initiative

(v) Tertiary courses

An important way to promote the use of trees in farming to combat land degradation is through formal education. Melbourne University has already introduced an agroforestry course. Other tertiary institutions with agricultural or forestry programs will be encouraged to introduce agroforestry courses.

4. Resources

The report has implications for staff resources, and other funding requirements. Whilst the need for economy is well understood, it is vital that extension services and research activities are realistically focused and resourced in order to translate the soil conservation initiative into action on the ground.

This strategy provides the framework for member organisations of NAWG to consider how they may allocate existing resources and seek additional funding where necessary.