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The development of management guidelines
for sustainable livestock farming
in the Hawke's Bay.

A thesis submitted in partial fulfillment of the requirements
for the degree of Master of Agricultural Science
in Farm Management at Massey University.

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ABSTRACT

Regardless of how sustainable land management is defined, it will never be achieved unless land users are involved in, and committed to, its attainment. To commit to a goal of sustainability, stakeholders must share in the identification of resource management problems and in the development of solutions that are both economically and socially acceptable.

Facilitated workshops were held with twelve farmer and two agribusiness groups in the Hawke's Bay during July and August 1994. The workshops were held to involve participants in the development of guidelines for pastoral farming in Hawke's Bay and Wairoa, using the "*by farmers for farmers*" approach. The farmer workshops were used to develop an operational description of sustainable livestock farming and to identify the main components of sustainability. The agribusiness workshops sought to encourage support by this sector for the guidelines and the farmers who would implement them.

The advantages associated with sustainable farming applied to all components of the system. The farmer and family, natural resources (the farm), the community and future generations all were all seen to benefit from sustainable farming. Through the workshops, the farmers identified the components and criteria that describe sustainable farming. They suggested that sustainable farming may be recognised by practices that result in productive soil, sufficient water quantity, good water quality, productive pasture, appropriate trees, productive animals, and successful, prosperous and flexible farmers. Using the concept pyramid process, farmers identified key management practices that would result in the sustainable use of soil, water, animals and plants in the farming system.

A farming committee was elected to represent the views of farmers, and work with the consultant commissioned by Hawke's Bay Federated Farmers, to produce the pastoral farming guidelines. The management practices identified by farmers were written to a set of guidelines, which were circulated for public comment and submission. The workshop participants, stakeholders and the general public were involved in the consultation process, to continue the participatory approach utilised in the workshops. All workshop participants were sent a complimentary copy of the pastoral guidelines and a questionnaire. The survey aimed to assess the participants' perceptions and usage of the guidelines, as well as gauge farmer interest and obtain direction for follow-up work. In broad terms, the guidelines met the expectations of farmers and were viewed as being useful for encouraging discussion about, and implementation of, sustainable farming practices.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Regardless of how sustainable land management is defined, it will never be achieved unless land users are involved in, and committed to, its attainment. Since the 1980's, there has been growing acceptance in New Zealand that the involvement of stakeholders in environmental decision-making underwrites the attainment of socially acceptable sustainable land use. To commit to a goal of sustainability, stakeholders must share in the identification of resource management problems and in the development of solutions to these which are both economically and socially acceptable. Involving land users in planning, developing and implementing more sustainable land use systems, leads to the point where they assume responsibility and ownership of this endeavour (Campbell, 1992a; Campbell, 1992b; Wardle 1994).

Agriculture in some form, is the dominant land-use for over 75% of New Zealand's physical land area (Statistics New Zealand, 1995). Farmers and Government recognise that there are new ecological and social challenges facing agriculture, and hence, the use of land. Environmentalists, conservationists and those involved in the use of land for leisure, are claiming the right to comment on and influence the management of land under agriculture.

Farmers have a direct stake in resource-use and thus, logically should be closely involved in the identification, planning and implementation of sustainable farming systems. Chapter One explains the rationale and outlines the role of farmers, the Hawke's Bay Regional Council and Hawke's Bay Federated Farmers in the development of resource-use guidelines for sheep and beef cattle farmers in Hawke's Bay and Wairoa.

1.2 Land use and environmental legislation in New Zealand

New Zealand has always had a variety of land or natural resource-based industries, but the most significant productive use of land has always been agriculture (including horticulture) (Rayner, 1990). The post-World War II economy generated a commodity boom in the 1950's, with a high demand for agricultural products. This demand encouraged the drive to increase production from pastoral farms, and Government policy implemented during this period focused on encouraging development and protecting the agricultural industry, in order to accommodate growth in this sector (Rayner, 1990). The Marginal Lands Act (1950), for example, resulted in the establishment of the Marginal Lands Board, to lend money for the development of unproductive and marginal land including clearing scrub, bush and timber. Similarly, the Livestock Incentive Scheme of 1976 was designed to increase stock numbers (Rayner, 1990) and the Supplementary Minimum Price Scheme (SMP) of 1978 introduced minimum prices for agricultural products. None of these pieces of legislation formally considered the environmental or other consequences, of the intensification of pastoral agriculture which they were designed to promote.

From the 1970's until the 1980's, environmental legislation and Government policy in New Zealand concentrated on increasing agricultural production rather than sustainable resource use. Major changes in environmental legislation since 1988, have led to existing legislation being replaced, amended or complimented by a single dominant statute, the Resource Management Act 1991 (RMA). The RMA was developed to provide a single, clear reaching objective, namely "to guide resource management in New Zealand". The RMA differs from previous legislation, in that it has a single purpose: "to promote the sustainable management of natural and physical resources". By bringing together laws governing land, air and water resources, the RMA introduced a totally new approach to environmental management. This integration means the environment can be looked at as a whole in planning and decision making with a standard set of requirements for all resource users.

Sustainable management is defined in the act (Section 5 (2)) as:

"the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety while:

- (a) sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; and*
- (b) safeguarding the life-supporting capacity of air, water, soil & ecosystems; and*
- (c) avoiding, remedying, or mitigating any adverse effects on the environment.*

1.3 Sustainable management

Attaining sustainable management, the primary purpose of the RMA, can be interpreted in a myriad of ways according to the user's perspective. The definition of sustainability reflects a number of factors, including the time frame (e.g. short versus long term), the components (e.g. economic, social and ecological), the rate of resource use or extraction, and the commercial structure of the venture.

Sustainability is a dynamic concept and cannot be achieved as an absolute state (FAO, 1993; Whitehouse, 1992). However, it is possible to judge the relative degrees of sustainability, for example Class VII land under tree cover is 'more sustainable' than Class VII land under pasture. Some signs of non-sustainable land-use on hill country include: on-site land degradation; off-site sedimentation and siltation leading to reduced water quality and flooding; a decline in rural services and rural infrastructure; and 'depressed' farmers. The RMA was developed to try and address sustainable management issues in a consistent and holistic way.

1.4 Participation in the planning process

The RMA allows for a greater level of participation in the planning process than under the land-use planning legislation which preceded it. The RMA replaced the Town and Country Planning Act 1977 which in turn replaced its 1953 predecessor. The 1977 Act was seen as an advance on the 1953 Act in that "it provided wider opportunities for groups and individuals to take part in both district and regional planning processes" (New Zealand Planning Council, 1977). The background to this thinking was that regional planning was no longer envisaged solely in the limited sense of physical land use planning, but in terms of broad policies for achieving a particular future for a region together with the allocation of resources to implement these policies (New Zealand Planning Council, 1977).

The RMA provides opportunities for the community to suggest how resources in their region will be managed by local authorities. Local authorities, for example, are required to implement a consultation and submission stage during the preparation of plans. However, the community often feels they have not been consulted on important issues or have not had an opportunity to “have their say”. The process used may not always be the most appropriate for the resource-user, although it may fulfil the expectations of the authority. The RMA requires councils to consult with the public when a plan is “notified” (the exceptions being Iwi authorities and Government departments who must be consulted during the development stages). Councils act within the law by consulting at the notification stage, however, a more pragmatic and participative approach may be to meet with land-users to discuss the structure and practicality of rules and other methods in the proposed plan.

Sustainable management is the purpose of the RMA, however, disparities may exist between resource-user and planner definitions of sustainable management and this often leads to a lack of communication and conflict. Community involvement in a process to achieve a jointly owned goal is believed to be the most effective method of achieving sustainable resource use in New Zealand (Donaldson, C. 1995, pers. comm.). Campbell (1992c, p.18) reached a similar conclusion when discussing sustainability in Australia, by commenting that “whether at farm, catchment or national scales, over a few years or many generations, community participation is critical to achieving sustainable land management”.

1.5 Environmental trade issues

Environmental trade barriers based on non-sustainable land management practices or animal welfare issues are a potential threat to New Zealand’s pastoral export industry. In 1993, the Ministry of Agriculture and Fisheries (MAF) released a Position Paper on Sustainable Agriculture (MAF, 1993). One reason for the Paper’s inception, was that consumers world-wide are increasingly concerned about the effects of some farming systems on the environment. These concerns provide opportunities for New Zealand to position our products as ‘clean and green’, and as coming from a high quality, more sustainable farm environment. Resource-users must ensure that sustainable production methods are used to capitalise on this ‘clean green marketing image’.

Overseas and domestic customers are raising concern about the environmental effects of agricultural production and how resource users deal with off-site issues. One way to address these concerns is to prepare user guidelines, which highlight sustainable farming practices and encourage monitoring by the land-users to provide future proof of prudent resource use. Guidelines could be prepared by the individuals involved in production activities from the land, or by industry with collaboration with resource users. Farmers have already been proactive and involved in establishing ‘best’ practices for resource use in several regions (Parminter et al., 1993; NOSLaM, 1996). This thesis outlines the process undertaken by Hawke’s Bay Federated Farmers and sheep and beef cattle farmers to establish “best practices” to address environmental concerns associated with pastoral farming in Hawke’s Bay.

1.6 Hawke’s Bay perspective

1.6.1 The Hawke’s Bay region

The Hawke’s Bay Region covers a land area of 1,240,024 hectares on the east coast of the North Island of New Zealand (Hawke’s Bay Regional Council, 1995). It stretches from north of Mahia Peninsula to just south of Porangahau. It is flanked in the east by the coastline and in the west by the Ruahine, Kaweka, Huiarau and Ahimawana Ranges. Topography varies in the region from steep hills, rolling and hilly country, to broad plains. The Hawke’s Bay Region is administered by the Hawke’s Bay Regional Council and four main territorial authorities: the Wairoa, Hastings and Central Hawke’s Bay District Councils, and the Napier City Council.

1.6.2 Land use

Land use in the Hawke’s Bay region ranges from extensive pastoral farming and forestry to more intensive livestock farming, cropping and horticulture. Pastoral farming, the major land use in the region (Valuation New Zealand, 1994), ranges from steep hill country sheep and beef cattle breeding properties to lowland finishing and mixed enterprise units. Exotic planted forests, which are increasing in area, are found mainly in the Hawke’s Bay and Wairoa districts. Planted forests and indigenous forest species, including areas of advanced regenerating forests, cover almost 30% of the Hawke’s Bay region (Hawke’s Bay Regional Council, 1995). Cropping of grain and field vegetables takes place predominantly on the fertile lowlands. Horticulture (pipfruit, stonefruit and viticulture) is an important land use and continues to expand in Hawke’s Bay.

1.6.3 Pastoral farming systems

Both breeding and finishing sheep and beef cattle properties are found in Hawke's Bay. Depending on climate, these farms are located in districts which range from 'summer dry' to 'summer moist'. The 'summer dry' properties are generally situated away from the western ranges and higher hills. The 'summer moist' farms tend to be situated on the western side of Hawke's Bay.

The 'summer dry' properties are typically breeding properties. The contour of these farms ranges from limited areas of flat to a majority of medium hill and some steep land. The main sheep policies involve the rearing of flock replacements and the sale of lambs either to the works (from 'easier country') or as store lambs (on 'harder properties'). The majority of the 'summer dry' properties have breeding cows, with some winter finishing of cattle to slaughter.

The 'summer moist' properties also breed their own sheep replacements but the majority of lambs are sold prime. Some units run breeding cows but also have more flexible cattle policies, for example, bull beef.

A third category of livestock property is also found in the Hawke's Bay. Finishing properties tend to be mixed hill and flat farms and generally small with high stocking rates and stock performance relative to those on steeper (and drier) hill country. The 'summer dry' units in mid and central Hawke's Bay, often purchase ewe replacements rather than breeding and draft lambs early to the works. (Ministry of Agriculture and Fisheries, 1995)

1.6.4 Role of the Hawke's Bay Regional Council

Regional Councils are local authorities with responsibilities for water and soil conservation, pollution control, coastal management (with the Department of Conservation) and air pollution. Regional councils issue resource consents for activities related to these fields and are also likely to deal with natural hazards of regional significance, for example, flood protection works on a major river.

Under the RMA, each regional council must prepare a regional policy statement (RPS). The RPS provides an overview of the region's resources and must pay attention to the links between the use of different resources, for example, the effect of a particular land use on water quality and availability. Regional plans may also be prepared for a particular resource or an aspect of resource use. Regional plans set rules, establish processes that people will be expected to follow in managing resources, and specify activities that require resource consents.

The Hawke's Bay Regional Council proposed a Regional Hill Country Erosion Control Plan in September 1993, after holding discussions with land-owners, the forestry sector, other interest groups and territorial local authorities. The Regional Hill Country Erosion Control Plan proposed that landowners self-regulate vegetation removal and earthwork activities on their properties. Operators (contractors) would be certified to undertake earthworks (for example, cut tracks). Non-certified operators would still be able to apply for a land use consent through the normal regulatory process (Hawke's Bay Regional Council, 1993).

The regional plan was prepared to extend the statutory life of the Section 34 transitional regional rules (formerly the Section 34 notice established through the 1959 Amendment of the Soil Conservation and Rivers Control Act 1941). The Section 34 notice provided regulatory controls on hill country land-use to prevent the adverse effects of erosion occurring through forestry or farming operations. The Section 34 notice also sought to control the downstream effects of erosion. The Hawke's Bay Regional Council believed retention of the Section 34 notice to be a useful way of reducing the adverse effects associated with some land uses on hill country. The Regional Council believed that controls on some land uses were needed to prevent soil erosion, and it was for this reason that the Regional Hill Country Erosion Control Plan was prepared.

Many sectors did not view the proposed Hill Country Erosion Control Plan in a positive way. Some of the main comments received through the submission process included:

- an actual and potential overlap with the provisions of district plans;
- the legality of the self-regulatory option;
- the uncertainty generated by using Land Use Capability (LUC) units or slope categories to delineate consent classes;
- insufficient clarity for performance standards; and
- the perceived lack of Maori consultation (Hawke's Bay Regional Council, 1994).

It was due to these factors that some farming groups offered considerable resistance to the plan's introduction. Although no more restrictive than the preceding rules, the regional plan was perceived by farmers to be a threat to their normal practices, and therefore, a threat to their lifestyle and profitability. After such feedback, the Regional Council elected to withdraw the Regional Hill Country Erosion Control plan in February 1994 and instead to visually monitor land use activities over a two year trial period.

1.6.5 Role of Hawke's Bay Federated Farmers

Federated Farmers of New Zealand (Inc.) is a sector organisation working on behalf of farmers, their families and the rural communities within which they live (Federated Farmers, 1996). The Federation directly represents the specific interests of arable, dairy and meat and wool farmers. The mission statement of Federated Farmers of New Zealand is: *"to add value to the business of farming"*.

Federated Farmers view themselves as "the voice that sticks up for farming" and "taking a stand for those on the land" (Federated Farmers, 1996). The Federation comprises twenty four provisional organisations and a national head office. Members pay an annual fee to join Federated Farmers and receive provisional and national support. The provisional offices act as a point of contact for members and provide information and advice to them on topics such as: labour relations; resource consents; farm safety and legal obligations; fencing and boundary obligations and stray stock. Submissions on legislation and focusing on issues such as property rights, accident compensation, animal welfare and rural funding are functions undertaken at the national level. The Federation also produces "Straight Furrow" (a national rural newspaper).

Hawke's Bay Federated Farmers opposed aspects of the Regional Hill Country Erosion Control Plan. They were concerned that the plan was: too restrictive; contained greater control than farmers thought was necessary; too dictatorial and that "farmers were concerned they would be told what to do". This prompted Hawke's Bay Federated Farmers to approach the Regional Council for help in preparing a Pastoral Code Of Practice or Pastoral Guidelines for Hawke's Bay and Wairoa farmers. Federated Farmers and farmers (members and non-members) considered they were in a better situation than a planning organisation, to write their own guidelines on how their resources should be managed. This approach to regional resource management was termed "*by farmers for farmers*".

A Pastoral Code Of Practice was envisaged by Federated Farmers as a parallel to the Forestry Code of Practice which was prepared and written by the forestry industry (Logging Industry Research Organisation, 1993). The aim of the Forestry Code of Practice, which is closely aligned with the aim of the RMA, is "to plan, manage and carry out forest operations in a sustainable manner" (Visser, 1994).

A Pastoral Code of Practice would result in self-regulation of land use and a positive, educational approach to encourage improvement of land-use methods rather than restricting activities. Such a document would also indicate a desire to work towards sustainable resource use - a 'target' sought by domestic and overseas customers (see Section 1.5).

To initiate the process for preparing the code of practice, a small steering group of four farmers (the Farming Committee) was elected to represent farmers, and work with its consultant and the Hawke's Bay Regional Council. The three men and one woman represented farmer interests in four main areas, namely Wairoa, Kotemaori, Tangoio/Napier and Central Hawke's Bay. The President of Hawke's Bay Federated Farmers and the Chairman of Wairoa Federated Farmers were members of the committee.

The committee's aim was to prepare a document highlighting sustainable farming practices in Wairoa and Hawke's Bay. They established reasons for carrying out the exercise at the outset and these were used to maintain direction and focus throughout the process. These included (not in any particular order):

- to avoid the imposition of rules by local authorities;
- to satisfy environmentalists and other pressure groups; and
- to help maintain access to and develop new markets for produce.

1.7 Process used by Waikato Federated Farmers

The Waikato regional committee of New Zealand Federated Farmers (Inc.) undertook a similar activity in their region to develop guidelines for pastoral farmers, at the same time as their Hawke's Bay counterparts. Waikato Federated Farmers commissioned a sub-committee to produce a "grazing management practices guide" for farmers who wished to implement sustainable methods of farm management (Parminter et al., 1993). Part of the process included a series of three workshops facilitated by social scientists from AgResearch (Whatawhata) in order to identify sustainable farming practices already used by farmers.

The Waikato Federated Farmers wanted farmers to be able to contribute towards a definition of sustainability and how this could be achieved at the local (i.e, farm and catchment) level. These goals formed the basis of the workshop purpose, namely:

- to develop an operational definition of sustainable farming;
- to identify farming practices important to profitable, sustainable farming and how they affect it; and from this; and
- to list the subjects or sections to be included in Waikato Federated Farmers booklets on sustainable farming practices.

Workshops were held at Cambridge, Huntly and Otorohanga. The three workshops were conducted in the evening during the course of routine Federated Farmers meetings. Between 30 and 40 farmers attended each workshop. The farmers represented a range of backgrounds and enterprise types, including dairy, mixed livestock and deer. Federated Farmers took steps to deliberately encourage discussion and debate amongst members who held a range of political views and opinions about the topic of sustainable land use.

The process developed by an AgResearch scientist and used by the Waikato subcommittee (Parminter et al., 1993), was adapted to the Hawke's Bay scenario. This principally related to the use of the concept pyramid process as detailed in Sections 3.2 and 3.3.2.

1.8 Scope of Thesis and Research Objectives

The overall aim of the research reported in this thesis was to develop a process for resource user' participation in the development of resource management guidelines, in order:

- to develop a resource-user definition of sustainability in pastoral farming; and
- to study a participatory approach to the development of resource guidelines.

1.9 Thesis Outline

The thesis comprises six chapters. Chapter One has outlined the rationale and background to the workshop process and detailed the involvement of the Hawke's Bay Regional Council and Hawke's Bay Federated Farmers in this work. Chapter Two reviews literature on sustainability, environmental legislation and participation, and provides a basis for the discussion of results presented in later chapters. The facilitative method used in the farmer and agribusiness workshops is detailed in Chapter Three and results from the workshops are outlined and discussed in Chapter Four. The process used to produce the guidelines for sheep and beef cattle farmers, and the evaluation of the completed guidelines is the topic of Chapter Five. The concluding Chapter provides recommendations for those wishing to repeat the process for conducting workshops and preparing guidelines, and outlines where further work is required.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

New Zealand and international literature is reviewed in relation to the meaning of sustainability, sustainable land management, land-use, legislation in New Zealand and the use of participatory processes as a mechanism to achieve goal congruence in a diverse community. The aim of this critique is not to complete a comprehensive review of literature associated with sustainability or to provide a synopsis of all definitions for sustainability. Rather, it seeks to provide a background to the concept of sustainability within which the results can be compared and discussed. The definitions presented are those most commonly espoused in the literature and used as a basis for developing sustainability programmes.

2.1 Sustainability

In the past decade, sustainability has become a popular and widely used term both within New Zealand and overseas. It is the subject of legislation (the Resource Management Act) and policy (MAF Policy on Sustainable Agriculture; Ministry for the Environment policy on Sustainable Land Management); the theme of conferences (two Sustainable Land Management Conferences held in New Zealand); the focus of secondary school education material (three MAF Policy Sustainable Agriculture kits) and a topic in numerous scientific journals, the popular press and a subject of research. With respect to publications, most offer a definition of sustainability as a background against which the authors and practitioners grapple with the complexities of the subject. Even though research on sustainability is wide ranging (see for example, Allen et al., 1991; Gliessman, 1990; and Campbell, 1991), there is universal agreement that sustainability is a complex concept which can be viewed from many perspectives.

The principles of sustainability are based on the premise that humans have to satisfy basic needs. The satisfaction of needs requires the development and use of natural resources and environmental amenities (Meister and Weber, 1991). Based on this premise, sustainability will mean different things to different people depending on a variety of factors. Each generation defines sustainability according to existing information and current experiences (Sriskandarajah et al., 1990; Whitehouse, 1992), and from their perspective as a resource-user (Campbell, 1991).

2.1.1 A definition for sustainability

The concept of sustainability is dynamic in that what may be sustainable in one area, may not be in another, and what was sustainable at one time may not be now. As encapsulated by Jiggins (1994, p.119) “sustainable farming is not an end state, as the end state is not known”. Similarly, Campbell (1991, p.4) comments that sustainability is not an absolute state but a moving target “for which we must continually adjust our aim with better knowledge and changing economic and physical circumstances”. For these reasons, sustainability cannot be measured directly, but assessments can be made of the states or degrees of sustainability (Whitehouse, 1992; Food and Agriculture Organisation of the United Nations (FAO), 1993).

The definitions for sustainability, sustainable development, sustainable land management and sustainable agriculture, include a range of environmental, economic and social components. Some literature provides a synopsis of definitions of sustainability, agricultural sustainability and related concepts (Reeve, 1990; Sriskandarajah et al., 1990; Allen et al., 1991; Blashke et al., 1992; Campbell, 1992b; Dicks, 1992; and FAO, 1993). Regardless of how sustainability is defined, the commitment and involvement of land users in achieving the concept is a key issue (Campbell, 1992a). Sustainability, sustainable land management and sustainable agriculture can be defined or described in terms of desired outcomes or the characteristics of a sustainable system.

To date, more emphasis has been placed on the theory and concepts of sustainability in agriculture, rather than its implementation in practice. Thus, many land users voice concern that 'too much time is spent defining and not enough time doing'. Allen et al., (1991, p.34) defend the situation, by posing the question "How can we form an improved agricultural system if it has not yet been clearly conceptualised?" Dicks (1992) comments that 'how' sustainability is defined, determines who is the target of change. Developing a clear, workable definition of sustainability, is therefore important.

2.1.2 Sustainable development

The concept of sustainable development was introduced to a wide audience in Our Common Future produced by the World Commission on Environment and Development in 1987. The Commission defined sustainable development as:

"..... development that meets the needs of the present (generation) without compromising the ability of future generations to meet their own needs".

The key principles of sustainable development in the Australian context were discussed by Squires (1991), as being the integration of conservation and economic development objectives, and as providing an avenue for an ecologically sound and humane future. Grundy (1993) described sustainable development as a "tripartite construct comprising three interwoven, interdependent and inseparable strands - ecology, social and economic sustainability". Grundy further commented that ecological sustainability provides the overarching framework, social sustainability dictates the end state and economic sustainability is the means to achieve the end state.

2.1.3 Sustainable management and sustainable land management

Sustainability is the primary purpose of the Resource Management Act. A definition for sustainable management is provided in the Act (Section 5 (2)), and this has provided the basis for developing Government strategies and policy papers on achieving sustainable systems. The Ministry for the Environment (MfE), for example, prepared a Sustainable Land Management Strategy in 1996, and rather than defining sustainable land management, identified seven desired outcomes (MfE, 1996) that are consistent with the RMA definition.

These desired outcomes for sustainable land management are:

- *“the maintenance of New Zealand soils for a range of uses for present and future generations;*
- *the adoption of land management skills and the application of appropriate technologies to enable individuals and communities to provide for their social and economic well-being;*
- *the adoption of management practices that maintain or enhance the quality of groundwater resources, coastal waters and waterways regarding harmful microorganisms and other contaminants, suspended sediments and nutrients;*
- *the avoidance, mitigation and remediation of the impacts of land-related hazards, including flooding, subsidence and erosion;*
- *the maintenance of catchments to provide high quality water resources for downstream users and for users of coastal spaces (intertidal areas, seabed, water);*
- *the maintenance of cultural values associated with land and water, including the relationship of Maori and other traditions with their ancestral lands, water sites, waahi tapu, and other taonga; and*
- *the maintenance of aesthetic, ecological and conservation values related to land and water”.*

An international working group developed an International Framework for the Evaluation of Sustainable Land Management (FESLM) in 1993. The framework was designed as a structured, logical pathway for making decisions on whether or not a well-defined form of land management is likely to prove sustainable over a defined period of time. The definition developed for sustainable land management was (FAO, 1993):

“Sustainable land management combines technologies, policies and activities aimed at integrating socio-economic principles with environmental concerns so as to simultaneously maintain or enhance production/services; reduce the level of production risk; protect the potential of natural resources and prevent degradation of soil and water quality; be economically viable and socially acceptable”.

2.1.4 Sustainable agriculture

The pre-1980's emphasis in agriculture upon maximising yield and profitability in the short term, has progressively shifted to a perspective that adds value to the ability to sustain productivity over the long-term (Gliessman, 1990). Similarly, Moran et al., (1993) comment that the initial focus of agricultural literature and research upon biophysical environments, has widened to include the social and economic aspects of sustainability. Dicks (1992) suggests that sustainable agriculture is not a novel concept, but rather the means by which farmers have successively operated to ensure family farms are passed down from generation to generation. Examples of definitions and descriptions of sustainable agriculture systems follow.

Reeve (1990, p.18) defined sustainable agriculture as:

“agriculture that seeks to be profitable for the individual farmer; produce adequate quantities of food and fibre that is nutritionally adequate and free of chemical residues, and conserve the agricultural resource base and minimise deleterious off-farm environmental impacts”.

Allen et al., (1991, p.37) provide an excellent synopsis of agricultural sustainability definitions. Their version recognises the whole system approach and goes beyond placing priority on environment and production practices, and gives greater emphasis to social concerns, as follows:

“Sustainable agriculture is one that equitably balances concerns of environmental soundness, economic viability and social justice among all sectors of society.”

Lacy (1993) described sustainable agriculture as a complex concept that refers to an interconnected framework of technologies, practices and systems that have been developed in response to problems facing agriculture and the American food system. He emphasised that the system must be economically sound, socially acceptable and environmentally compatible.

Lacy (1993) favoured the definition developed by Allen et al., (1991), since it moves beyond short-term microeconomic profitability at the farm-level to consider the entire agricultural system and equity within this, in order that the costs and benefits associated with any environmental decision are shared fairly among all society. However, Lacy (1993) did not comment on how policy, economic or legislative instruments, could be developed to achieve such an outcome.

Blaschke et al., (1992, p.184) defined agricultural sustainability in the New Zealand context as:

“A sustainable agroecosystem has the goal of increasing social value, while maintaining ecological processes essential for perpetuating itself and connected ecosystems, and providing products whose net value (incorporating externalities) exceeds the net cost of output.”

Campbell (1991, p.4) defined a sustainable farming system as:

“One which is profitable and maintains the productive capacity of the land while minimising energy and resource use and optimising recycling of matter and nutrients.”

Sustainable agriculture was defined by the Australian Standing Committee on Agriculture and Resource Management (1993, p.1) as:

“the use of farming practices and systems which maintain and enhance the economic viability of agricultural production; the natural resource base (and) other ecosystems which are influenced by agricultural activities”.

The summarised definitions for sustainable agriculture recognise the social, ecological and economic aspects of this type of farming. However, these definitions are subjective and not easily measurable or workable at the farm scale.

A range of literature describe the characteristics of a sustainable agricultural system. Hamblin's (1992, p.1) description is:

“be long lasting relative to human time frames; be profitable (valuable) relative to other land uses; (and) maintain a healthy resource base for biomass production”.

Similar characteristics of a sustainable agricultural system were suggested by Campbell (1992a). Sustainable agricultural systems are generally: stable; regenerative; productive and profitable; resilient; appropriate; self-reliant and non-disruptive. A full explanation of these terms is given by Campbell (1992a).

Crews et al., (1991, p.147) suggest that sustainable agriculture is delimited by ecological constraints and discuss four conditions that must be met if farm productivity is to be met over the long-term. These four conditions are the maintenance of soil fertility, the preservation of water supplies, the protection of human health and the conservation of species diversity.

Dicks (1992, p.191) also described the characteristics of a sustainable farm. He suggested that sustainability in farming implies:

“Less specialised farming and more mixed crop/livestock farming with less dependence on off-farm inputs; full pricing of off-farm inputs, with no price supports for crops that degrade the environment; producers bearing the costs of off-farm environmental damage; (and) family sized farms rather than corporate factory farms”.

A policy paper on sustainable agriculture released by the Ministry of Agriculture and Fisheries, (MAF) described, rather than defined, sustainable agriculture in the New Zealand context (MAF, 1993, p.2). It stated that sustainable agriculture practices are concerned with maintaining or improving the quality of our natural resources, the nation's producers and agribusiness remaining financially viable, preserving the quality and safety of food and fibre, and the ability of people to provide for their social and cultural well-being.

The above definitions and descriptions of sustainable land management or sustainable agriculture have five common features. These are that:

- sustainable agriculture is a system;
- there are links between economic and biophysical viability;
- biodiversity must be maintained;
- social concerns (individual and community scale) are considered, and,
- present and future generations are considered over a long term time scale.

Some (e.g. Allen et al., 1991; Dicks, 1992; and the Australian Standing Committee on Agriculture and Resource Management, 1993) also consider the impact of agriculture on other ecosystems and make reference to the off-site impacts of agricultural activities.

2.1.5 Sustainable land management in New Zealand

There are a range of environmental issues associated with past and current land-use practices in New Zealand. Some of these issues were identified in the Government's Environment 2010 Strategy (Ministry for the Environment, 1994), and include: introduced pests and weeds; degradation of wetlands; reduction of lowland forest areas; clearance of hillside vegetation leading to soil erosion and degradation of water quality; damage to river and lake ecosystems; and contaminated sites.

In association with the Environment 2010 Strategy, MfE also prepared a Sustainable Land Management Strategy (MfE, 1996), which highlighted land-uses with potentially adverse impacts on the environment. The strategy focused on the South Island high country, North Island hill country and the impact of agriculture on water quality, and offered action strategies to address the issues in these areas.

Hill country erosion is a major North Island hill country sustainable land management issue with both on-farm and off-farm effects. Some of the on-farm effects of soil erosion identified by sheep and beef cattle farmers in the Hawke's Bay, include damaged fences and tracks, loss of pasture, reduced productivity, bogged stock, and loss of vehicle and livestock access (Collins and Wilkinson, 1995). On-farm erosion leads to downstream effects, such as reduced water quality, loss of aquatic habitat, siltation of waterways, and an increased risk of flooding (Collins and Wilkinson, 1995; MfE, 1996).

Significant hill country issues in the Hawke's Bay region are identified in the Hawke's Bay Regional Policy Statement (RPS), for example, land degradation, reduction in water quality and the adverse downstream effects of vegetation clearance (Hawke's Bay Regional Council, 1995). The RPS contains policies designed to address each significant issue. The Hawke's Bay Regional Council has a policy to address hill country erosion, namely "to promote the retirement or afforestation of unstable hill country, or the retention of indigenous or other vegetation on unstable hill country, in order to protect soil and water resources from adverse effects" (HBRC, 1995, p. 60).

2.2 Environmental Legislation

The purpose of legislation is to organise or prevent activities (Bradsen, 1992), and as such, provide an instrument which can utilise local community knowledge and skill, but ensure a level of objectivity that is in the interests of the wider community. As stated in the Environment 2010 Strategy, "an effective and coherent body of law and practice is essential for achieving better environmental management and improving environmental quality" (MfE, 1994, p.49).

Bradsen (1994) made two salient points regarding environmental legislation in his paper to the Second New Zealand Sustainable Land Management Conference. First, legislation is inevitable since it reflects the most dominant values which persist in the community. Sustainable land management is becoming a more dominant value in the New Zealand community. Second, legislation is necessary, because sustainable land management is unlikely to be achieved without it. This is because the two forces that operate in the absence of legislation (economics; and values, attitudes and beliefs) by themselves are not sufficient conditions to produce sustainable land management. Bradsen concluded in his presentation that legislation should seek to empower, organise and guide communities to achieve sustainable agriculture.

2.2.1 The environmental legislative framework in New Zealand

The legislative framework for the sustainable management of the environment in New Zealand, includes seven major Acts:

1. Environment Act 1986 (established the Ministry for the Environment and Parliamentary Commissioner for the Environment);
2. Conservation Act 1987 (provides for the preservation and protection of New Zealand's natural and cultural resources);
3. Local Government Amendment Act 1989 (provides for regional and territorial authorities);
4. Ozone Layer Protection Act 1990 (restricts importing of ozone depleting substances);
5. Resource Management Act 1991 (controls the environmental effects of activities on land, air and water, including the coast);
6. Biosecurity Act 1993 (prevents the introduction of unwanted organisms and provides for strategies to manage pests, weeds and diseases present in New Zealand); and
7. Forests Amendment Act 1993 (provides for the sustainable management of New Zealand's indigenous production forests) (MfE, 1994).

2.2.2 The Resource Management Act

A major legislative change with respect to environmental management in New Zealand, resulted in a combination of environmental legislation being replaced, amended or complimented by a single dominant statute, the Resource Management Act 1991 (RMA). The essential process of the RMA, in comparison to previous legislation, was described by Randerson (1991), Chairperson of the Resource Management Bill Review Group, as "a framework to empower the people to achieve sustainable resource use, rather than a set of rules to dictate the process". The RMA also allows for greater community involvement in the planning process than previous legislation.

Major changes in the way resource-use is viewed in New Zealand have accompanied the introduction of the RMA. This legislation has wide reaching implications for all sectors of the community, and requires resource-users to carefully assess their current management practices, and to consider and control externalities they may initiate from resource use. The RMA requires landowners to be accountable for their actions and requires a critical evaluation of current primary production practices.

The RMA replaced nearly all previous legislation that had governed land use, planning and development, water and pollution control and site clean up, air quality control and specific types of resource development (Berry, 1993). The RMA thereby became the principal legislation for dealing with the environmental externalities of human activities and the principal statute for the management of land, subdivision, water, soil resources, the coast, air and pollution control (Berry, 1993). The RMA also defined the rights and responsibilities of individuals, central Government, territorial and regional councils, and introduced a common process for the application of resource consents.

After five years, the RMA is perceived by some landowners as a threat to their current land-based activities rather than an opportunity. In contrast, regional authorities view the RMA as an all encompassing opportunity to manage resources in a holistic and integrated manner although there are concerns about the escalating legal costs associated with the Act's implementation. The RMA was designed to be enabling legislation rather than stating policies and rules, in order to allow regional authorities flexibility to use a range of methods to enable the resources in their region to be managed in a sustainable manner. Some hill country farmers are concerned about the impact of restrictions emanating from the RMA. The overarching purpose of the RMA is "to promote the sustainable management of natural land physical resources". Dr Alec MacKay, an AgResearch scientist, stated at the 1993 Grasslands Conference, that "sustainable management won't mean the demise of farming steep hill country; it will ensure its long-term sustainability" (Annabell, 1993).

2.3 Community Participation

Community participation is an integral part of sustainable land management (Campbell, 1992c). Agenda 21, the list of actions for sustainable development in the 21st Century agreed by all 180 nations at the Rio “Earth Summit” in June 1992, stresses the importance of involvement of people at every level of society. The New Zealand Government recognised this importance, and stated in the *Environment 2010 Strategy* that “the active participation of people in decisions which affect the environment is critical to achieving a quality environment” (MfE, 1994 p.52).

2.3.1 What is participation?

Community participation is succinctly defined by Norcott and Chamala (1993, p.640) as “an educational and empowering process whereby people identify problems and needs and increasingly assume control of their own destiny.” Another definition of participation, offered by Jiggins and Shute (1984, p.115), is “to share or have a part in something”. The word participation is now used ‘freely’ and has become an everyday expression in the context of sustainability. However, as commented by Jiggins and Shute (1984), the term ‘participation’ is easier to define or debate than implement in practice. A similar comment applies to terms such as “sustainability” or “empowerment”.

Citizen participation in social planning was the subject of discussion in the United States in the late 1960’s. The discussion and controversy was precipitated by the inability of some sectors of society (for example Puerto Ricans, Indians and Eskimos) to comment on social plans and programmes directly affecting their future. Arnstein (1969, p.216) defined citizen participation “as a categorical term for citizen power”. She further extended this definition as “the redistribution of power that enables the ‘have-not citizens’, presently excluded from the political and economic processes, to be deliberately included in future discussion and negotiation”.

Arnstein further commented (p.216) that “there is a critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process. Participation without redistribution of power is an empty and frustrating process for the powerless. It allows the power holders to claim that all sides were considered but makes it possible for only some of those sides to benefit.” In her article to the American Institute of Planners Journal (1969), Arnstein developed an eight rung ladder of citizen participation. The ladder symbolises a progression from states of non-participation to degrees of tokenism to degrees of citizen power.

2.3.2 Models of participation

Jiggins and Shute (1984) described the historical development of participation by outlining three models of participation. Under the initial paternalistic model, beneficiaries had little, if any, direct involvement in the organisation of planning or services. The providers looked after all interests, always knowing ‘what was best’. A style of participation evolved from this that involved people in the processes of needs identification and programme development. Later, attention focused on participation as ownership and control by the beneficiaries rather than by those who claim to “know best”. This model, encompassed the principles of equality, countervailing power and democratic management structure.

Howard et al., (1984) summarised the purposes of participation (termed involvement in this literature), as: supporting the democratic ethic (i.e. the people should be accountable for the consequences of their own decisions); to build acceptance (i.e. the people are more likely to accept and support programmes of change and accept greater change when they have been given the opportunity to participate in the planning process); to improve decisions (i.e. plans are likely to be improved by getting the citizen’s point of view) and to improve learning (i.e. involvement can be designed to create awareness and understanding, to effect behavioural change and to set the stage for further involvement in the future).

2.3.3 Community development programmes

Community development programmes have been in place for nearly four decades (Norcott and Chamala, 1993), but the use of participation has mostly occurred in 'developing countries' rather than the 'richer developed' nations (Lussignea, 1994). There is considerable documentation describing cases of participation, and the various methods that have been experimented with. Lussignea (1994), for instance, outlined examples from developing countries, and public participation in natural resource matters in Scotland.

Norcott and Chamala (1993) examined the success of community development approaches to rural development programmes in developing countries and discovered four main reasons for programme failure. These were identified as use of a western development model, a refusal to acknowledge the importance of local knowledge and customs, a lack of empathy with the disadvantaged, and the lack of skills of development workers. "Genuine participation" (Norcott and Chamala, 1993) grows from people being involved in all stages of the programme's development (Chamala, 1990).

2.3.4 Examples of community participation in the Australian context

Participation and involvement in resource planning and management has become an integral part of the Australian Landcare movement. As stated by Campbell (1992a, p.18), "there has been a quiet revolution in community participation, reflected in the Australian Landcare movement, which has far outstripped policy, institutional and legislative responses in pursuit of sustainability".

Wilkinson and Barr (1993) undertook an extensive review of community planning in the Victorian salinity programme for the Victorian state government. They comment that community involvement and consultation are sometimes mis-represented as being major contributors to the success or failure of the planning process. In fact, more fundamental issues were found to determine the outcomes from planning and the extent of local support. These influences were described as the community perception of the problem, the nature of the solutions, and the acceptability to the community of the planning guidelines laid down by Government.

Dymond et al., (1993) assessed the effectiveness of participatory planning as a framework for developing more sustainable farming systems in Western Australia. Farmers and resource managers participated collaboratively in planning and implementing strategies to ensure farm productivity is maintained into the future. The participating farmers emphasised the benefits of working in catchment groups as co-operation between farmers, sharing ideas, learning from each other and helping to build a stronger community spirit. The negative aspects identified were the difficulties in making time for meetings and field days, and the amount of paperwork required for the mapping and planning exercises.

Cumming and Erol (1993) described an extension programme in Northern Victoria which encompassed farmers from a very diverse range of languages, cultures, age and educational backgrounds. The main philosophy behind the programme was to include all participants, in order to encourage farmer participation. This approach to participatory management entailed the inclusion of landholders in policy development, decisions and activities, in order that the community might take-up true ownership of the decisions that affect them and to empower them to take control of their own direction for sustainable land management.

The consultation process undertaken by the Queensland Department of Primary Industries (QDPI) and producers on drought management is described by Swepson et al., (1993), who summarised the key principles of the process. The process provided an opportunity for producers to “to talk rather than listen”, which QDPI achieved by not inviting ‘experts’ to talk on the subject of drought. Involving regional staff in the consultation process was a second key feature, because the tasks of implementing the drought strategies would be their responsibility, thereby, encouraging ownership and a commitment for follow-up by the QDPI staff. Swepson et al., (1993) discussed the potential for problems when consulting on a highly political issue (i.e. drought) and noted that consultation raises the expectation that something significant will result from the process.

2.3.5 Examples of community participation in environmental planning in New Zealand

The process used to involve stakeholders in land-use regional planning in the South Island high country is outlined by Wardle (1994). An extensive consultation process was used, and land-use policies were developed for each area after this phase. A spatial land-use planning and conflict mediation tool (LUPIS) was used to facilitate the decision making process.

The North Otago Sustainable Land Management Group (NOSLaM), farmers and the Otago Regional Council developed a set of Sustainable Land Management Guidelines in 1995 (North Otago Sustainable Land Management Group, 1996). The group utilised the participatory concept pyramid method (outlined in Chapter Three) and held a series of workshops to actively involve farmers in the development of these guidelines. The results from the concept pyramid process are discussed in Section 4.4.2.

Manson and Grey (1994) described a participatory farm planning course held with land owners in the Hawke's Bay region. Hawke's Bay Regional council land management staff ran a series of training workshops in order to teach farmers how to prepare their own farm shelter plans. As stated by Manson and Grey (p.419), "by enabling land managers to design their own plans, a sense of ownership is generated which enhances the utilisation and effectiveness of the shelter plan".

2.3.6 Facilitation

Facilitation ensures all participants are able to contribute and participate in group processes. Facilitation can be described as the art of guiding the group process towards the agreed objectives (Hunter et al., 1992). Hunter et al., (1992, p.85) further commented that facilitation incorporates the "values of equity, shared decision making, equal opportunity, power sharing and personal responsibility". Campbell (1992b) described facilitation as the art of fostering synergy among others - developing skills, information and contacts to the people who need them most (the land users in this context).

Ching (1993) commented that the best answers to multi-faceted problems and challenges, result through collaboration and participative decision-making. In the most productive situations, group members are able to share their ideas freely and the group is able to take the best aspects of each idea as it designs a creative solution. Involvement in these activities results in collaboration and teamwork. The 'essence of facilitation' is further explored in Chapter Three.

2.3.7 Consensus procedures

There are a number of decision making processes that groups may utilise, for example, consensus decision making, majority decision making and individual decision making (Hunter et al., 1992). Collective (or consensus) decision making is based on "an agreement to reach agreement" by the whole group on the decision to be made (Hunter et al., 1992). Donaldson (1994, p.70) described consensus decision making as a process whereby every participant has "an equal voice", and also requires that "full and frank discussion be allowed", which means each participant has the opportunity to voice concerns, solutions, and/or options. Donaldson (1994) further commented that the group discussion produces a decision that is "acceptable overall" to all participants, rather than the traditional procedure of voting which promotes winners and losers in the decision making process. As consensus decision making requires a higher level of participation, ownership and responsibility, the decision is stronger and there is a greater likelihood that the decision will be implemented.

Consensus decision making was used in Canada in an initiative undertaken by the Canadian Round Tables to develop a vision for their sustainable future. Consensus processes encourage creative and innovative solutions to complex problems by bringing individuals with a diversity of knowledge and expertise to resolve the issues of concern (Canadian Round Tables, 1993). Consensus processes are more appropriate for diverse issues, such as sustainability, as because conventional decision making (for example, voting procedures or democratic majority) tends to exclude wide ranging views. Hunter et al., (1992) also comment that consensus decision making draws out the collective wisdom of the group and encourages each group member to actively participate.

2.4 Conclusion

Literature pertaining to sustainability, environmental legislation and participation were discussed in this Chapter. The essential features of sustainable agriculture were described. These were balancing production and the environment, maintaining the long term economic viability of farming and considering social concerns. However, it was noted that sustainable agriculture has been considered from a theoretical perspective, rather than implementation in practice. The literature provides a base from which the workshop process and results are compared. In the next Chapter, the method used in the 12 farmer and two agribusiness workshops is described.

CHAPTER THREE

THE WORKSHOP METHOD

3.1 Introduction

Hawke's Bay Federated Farmers wanted farmers to contribute towards the definition of sustainability and its implementation at a local level, in order that practical and workable on-farm solutions could be developed.. To achieve this, 14 facilitated workshops were held in the Hawke's Bay region (Hawke's Bay Regional Council boundaries). Six were held in the Wairoa area (Putorino to Mahia) and eight in Hawke's Bay (Patoka to Porangahau). The workshop locations are illustrated in Figure 3.1.

The majority (12) of workshops were for farmers. These were held at locations that reflected local communities of interest (see Table 4.1). Meetings for smaller districts, for example, Elsethorpe and Omakere, were combined where appropriate. The remaining two workshops in Wairoa and Hastings, involved invited agribusiness personnel and some farmers who had been unable to attend their local workshop.

In this Chapter, the concept pyramid technique and the facilitative method used in the 14 workshops are described. These elements formed the basis of each workshop.

3.2 Concept Pyramids

The Hawke's Bay workshops were based on the method developed for, and used by, the Waikato Federated Farmers (Section 1.8). Staff at Whatawhata research station developed the "concept pyramid" method for the Waikato workshops (Parminter et al., 1993). Its purpose was to help farmers create 'mental pictures' of the components of sustainable farming.

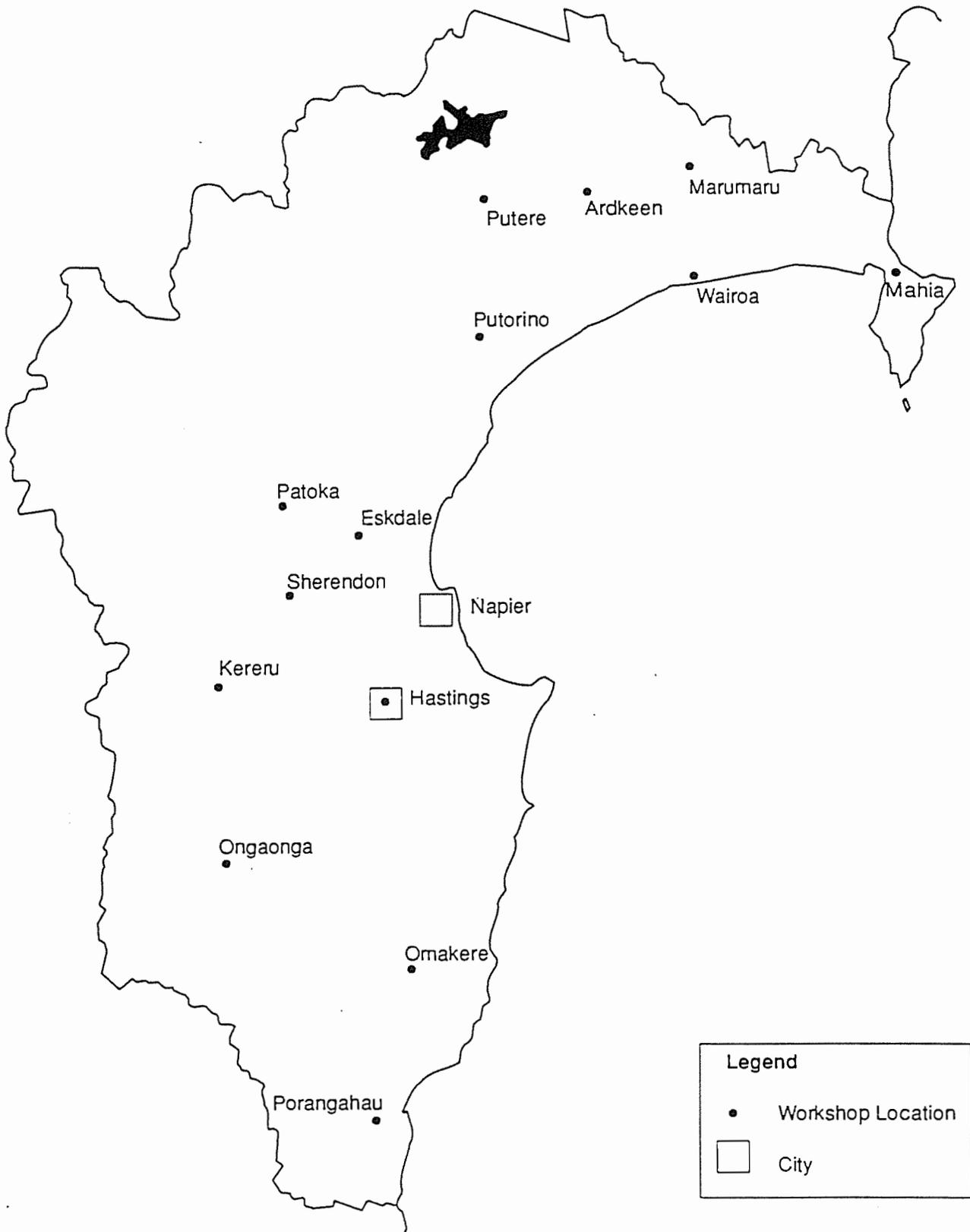


Figure 3.1: Workshop locations

A concept pyramid is a 'picture' of all the ideas or concepts about a topic. Ideas (or concepts) are words that create mental pictures. A concept is defined as a thought (Websters, 1955) or a general notion (Oxford, 1984). Ideas consist of nouns and adjectives but do not contain verbs.

A concept pyramid consists of several levels (Figure 3.2) and is built with:

- a title concept - the 'whole' idea;
- major concepts - representing the main parts of the title concept;
- minor concept - parts of the major concepts; and
- sub-concepts.

A concept pyramid aims to identify all the ideas (or concepts) at each level. Combined, these should make the previous level's idea complete. The number of levels in each pyramid is dependent upon the subject and the level of detail required. The process of developing a pyramid is complete when the ideas have sufficient detail to be undertaken in practice by the person developing the pyramid. If the 'practical' level is not obvious, then a further row of sub-concepts is added. Levels within the pyramid move from abstract or general at the 'top' to specific, practical and more "concrete" ideas at the minor and sub-concept level.

A concept pyramid provides a systematic framework to describe farmer perceptions of sustainability. Participants at each workshop contributed to their own pyramid building process by identifying concepts at each level. Commonly, three to five levels of increasingly more practical concepts were required to complete each 'title concept'. The process continued until participants had defined sub-concepts that directly related to their daily (i.e. operational management) farming decisions. Thus, implementation of these practices should enable the goal of sustainable farming to be achieved.

The physical, social and financial aspects of sustainability were covered in the concept building process. For example, a shelter planning programme considered the monetary cost for tree purchase, benefits to stock from shade, benefits from soil conservation, and the increased aesthetic value of the farm to the farmer, family and community.

The physical process of building a concept pyramid is detailed in Section 3.3.2 and Figure 3.2, and illustrated in Figure 3.4 through the example of purchasing ‘a good farm bike’.

3.3 Farmer Workshops

3.3.1 Objectives

An initial series of 12 workshops were held with farmers in their local communities. The objectives of the farmer workshops were to:

- involve farmers (the users);
- collect as many ideas as possible about what sustainable farming could mean; and
- develop a series of practical management practices which would help farmers towards sustainable resource use.

3.3.2 Method

An outline of the process used in the farmer workshops is illustrated in Figure 3.3. The pre-, workshop and post-workshop stages are also highlighted in this Figure.

A committee of community representatives was established, with each representative being delegated responsibility for organising their local workshop. Each representative advertised the workshop (telephone circle, advertisements and articles in the local paper, article in the school newsletter), organised the venue (usually the local hall) and arranged for refreshments or asked participants ‘to bring a plate’ for supper.

To commence the workshop, the local representative or Federated Farmers branch chairperson welcomed all attendees, and introduced the topic and the two facilitators. One facilitator ran each workshop while the other provided support and facilitation at the sub-group level. The two facilitators alternated ‘main’ and ‘support’ roles in successive workshops. The ‘main’ facilitator expanded on the subject (if needed), explained the reason for the workshop and the need for the guidelines, outlined how the meeting would be conducted, indicated what outcomes were sought and why these were important.

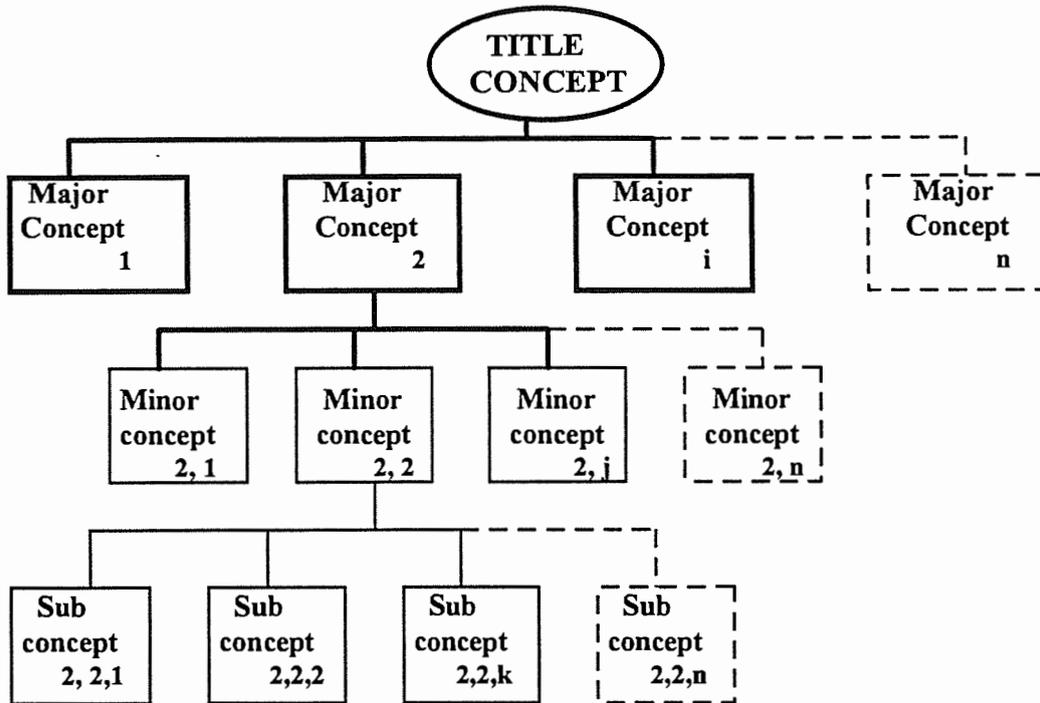


Figure 3.2 : Elements of a concept pyramid

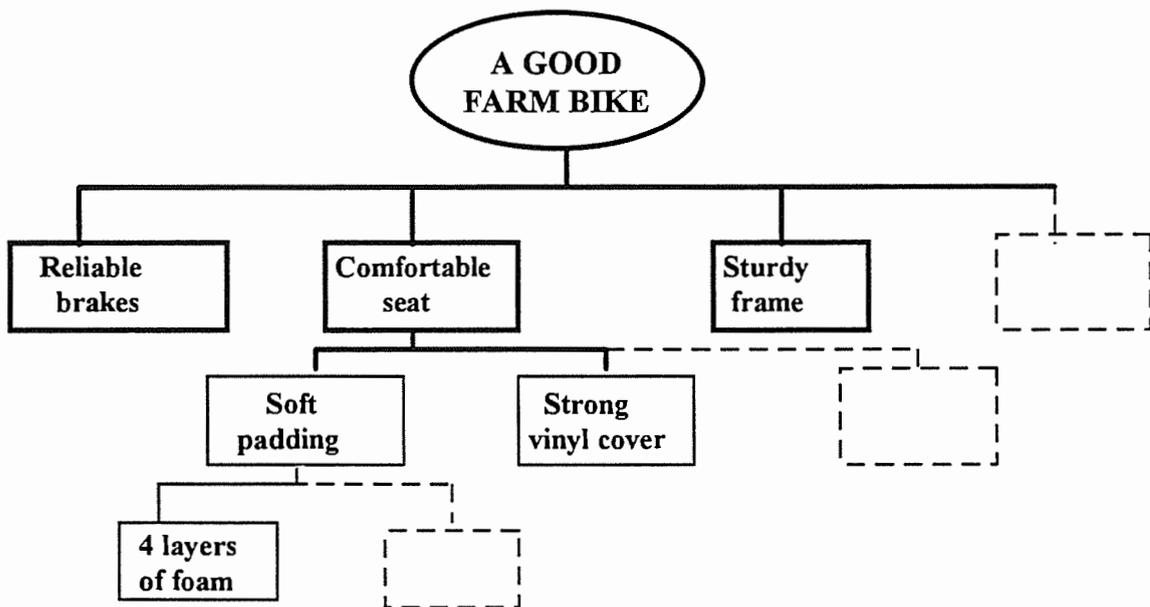


Figure 3.4 : An example of the concept pyramid process based on the farm bike.

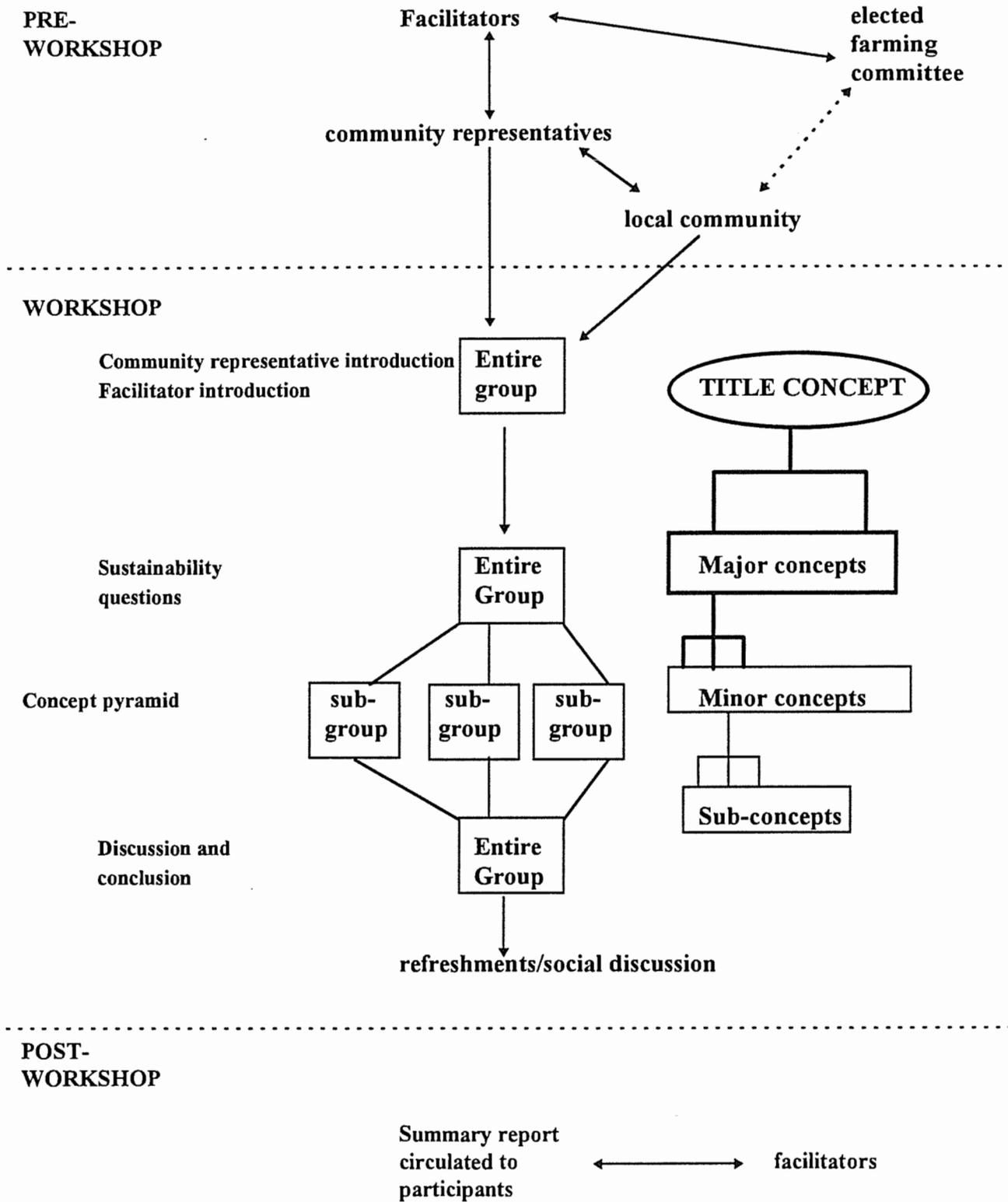


Figure 3.3 : Schematic summary of the process used in the farmer workshops.

Participants were invited to leave their name and address (on a note pad), so that a summary of the outcomes from “their” workshop could later be posted to them for comment or clarification. Participants were invited to check this workshop summary for accuracy, and to add extra details if they wished, before returning it to the facilitators. Not all participants left their details, for example, a couple often left one name with a comment of *“don’t send us two reports - we can share”*.

A workbook titled “Sustainable Agriculture Workshop”, plus a pen, was provided to each participant, and the facilitator explained its content. The workbook contained two parts, as illustrated in Appendix One. The front section explained the purpose of the workshop and was taken home by the participant; the second section was filled out by the participant and left with the facilitator after the workshop.

“Purchasing a farm bike” was used as an example to introduce the concept pyramid to participants (Figure 3.4). “A good farm bike” was the title concept. With participant input, some major concepts were described (for example, reliable brakes; sturdy frame; comfortable seat), and one major concept divided into minor concepts (comfortable seat has soft padding and strong vinyl cover) and sub-concepts (soft padding has 4 layers of foam). The pyramid was then read back to participants (i.e. “If you have 4 layers of foam you have a comfortable seat, and this is part of a good farm bike.”).

“Starter” questions were included in the second section of the workbook to encourage participants to think about sustainable farming and how it applied to them and their families. The question was discussed in the group setting before farmers wrote their answers to ensure they all understood the task. The question was written as:

“What are the advantages that I would obtain from farming in a sustainable way?”

Many commented that they were already farming sustainably, therefore farmers were invited to interpret the question as:

“What advantages do I get from farming sustainably?”

In some of the later workshops, a second question was also asked of participants, namely:

“What advantages would your community obtain from sustainable farming?”

The title concept for each workshop was “Sustainable Farming”. This was explained to participants as being similar to the “Good farm bike” example (used earlier). Participants were then asked to express the advantages they perceived from sustainable farming as concepts. The idea was reiterated that a concept contains a noun and an adjective, and that each noun could be used more than once but required different adjectives (for example, ‘clean water’ and ‘plentiful water’). A page of empty boxes (major concepts) was included in the workbook. Some examples were discussed as a group and assistance was given by the facilitator to convert advantages to concepts if necessary. Discussion was encouraged at this stage because it helped participants translate their advantages into concepts. Many participants were happier to complete this process on a one-to-one basis rather than as a whole group, in case *“they were the only one who didn’t understand what to do”*. Participants wrote their concepts in the workbook boxes, before transferring these onto small pieces of A6 paper using felt pens (alternatively, “post it” notes were used).

The facilitator divided a large sheet of newsprint (previously attached to the wall) into seven columns headed by the major concepts: soil, water, plants, animals, farmers, money and others. Farmers then stuck the A6 paper with each sub-concept on the newsprint (using “blu tac”) under the most appropriate heading. Columns and headings were not used at the first workshop at Kereru and participants were free to place their concepts anywhere on the main sheet of newsprint. However, sorting the material proved to be a long and complicated task with this approach and used considerable workshop time. After the Kereru workshop, the facilitators adopted the seven column headings which represented the major concepts that received the most mentions at the inaugural workshop.

Participants were asked to place similar ideas near each other to help with sorting, and if the same idea was already posted, to still add their own. However, participants often did not add their idea onto another already posted, with the common response being, *“Oh - the idea was already there”*. The facilitators were therefore unable to accurately gauge the number of times an individual idea was cited.

Depending on workshop size, participants were asked to vote, by a show of hands, for two to five of the major concepts (column headings) in order that these could be discussed in greater detail within sub-groups. Concepts with the most votes were selected for further discussion. Sub-groups typically comprised five to seven farmers, as this group size gave all participants a chance 'to have their say'. Workshop participants consistently voted for the major concepts that directly affected them on their farm or in their district. Completion of the workshop up to this stage usually took 60 to 75 minutes.

Each sub-group took the appropriate ideas for their major concept to another part of the meeting room (usually a district hall) and worked upon a new sheet of newsprint. The facilitator wrote the noun of the major concept on the newsprint (e.g. 'soil', 'water') and participants had to choose an adjective which best described the noun. For example, "*fertile soil*" or "*clean water*". Some sub-groups were unable to decide upon one adjective for their major concept and elected two, for example, "*quality water*" and "*quantity water*". The process then continued at lower levels in relation to the "quality" and "quantity" concepts. Examples of the development of major concepts are presented in Chapter Four.

The facilitators stressed the 'essence of facilitation' to the members of the sub-group, as requiring participants to listen to all opinions and allow all to express their point of view. Facilitation is further described by Hunter et al., (1992), Campbell (1992b) and Ching (1993), as reviewed in Chapter Two (Section 2.3.6).

The facilitators encouraged participants to use open ended questions, such as "*What type of water do we want in our district?*", to initiate the flow of ideas when discussing concepts. The facilitators also stressed that the sub-group members had to work together and apply consensus decision making in order to reach a desired end-point. Such a process provides a framework for individuals to work together without imposing the views of one group over another (Canadian Round Tables, 1993). Other aspects of participation and consensus decision making are described in Chapter Two.

Each sub-group of participants clustered their ideas into categories of similar outcomes and labeled each cluster, for example 'fertile soil', 'stable soil' and 'healthy soil'. The last stage was to describe management practices which were known by the participants to result in soils with these attributes. The practices were also evaluated in terms of their practicality at the farm level.

During the last 10 minutes of the two hour programme, a representative from each sub-group was asked to describe their concept pyramid. Members not in the sub-group could ask questions, but not alter what had been decided by the sub-group. Any suggestions or discussion points from other sub-groups were added in a different coloured pen to indicate that it was an addition to the original material discussed.

A summary of all individual (advantages from sustainability) and sub-group ideas (major concept pyramids) was mailed to each workshop participant within one week of the workshop's completion. The participants were invited to comment on the accuracy and interpretation of the workshop data, add any further ideas and return the amended material to the facilitators.

Amendments or additions were returned by 12 participants and these comments were added to the workshop report where appropriate. Detailed comments on the workshop information contained in the summary report were made by seven of these. Two examples of these included:

"Suggestions for a soil testing regime to ensure a flexible sustainable fertiliser programme was introduced" (Kereru participant).

"Considering the long-term effects of agricultural chemicals (e.g. dips, drenches, growth promotants and weed sprays) for sustainable livestock farming" (Eskdale participant).

The other five farmers returned more personal and philosophical views on sustainability and the workshop process. One example of this type of feedback was provided by an Eskdale farmer.

“The results of the workshop are good in that it has made some of us look at what we are doing and why we are doing it. It has enabled us to see just where you and other people, who are removed from our operations, see us and what we are doing”.

The feedback material was incorporated into the workshop results where appropriate.

3.3.3 Outputs

Three outputs from each farmer workshop were generated. The two main outputs were the perceived advantages from sustainable farming and a list of concepts that farmers believed to comprise sustainable farming. The third output was the participants’ concept pyramid map of the structure of each component of sustainable farming.

Outputs from each of the twelve workshops were combined to produce a list of advantages and a concept map for each identified component of sustainable farming.

3.4 Agribusiness Workshops

Two workshops were run in Wairoa and Hastings with personnel from a range of businesses servicing the agricultural sector (the organisations involved are listed in Section 3.4.2). The rationale for running these workshops was as follows:

1. The agribusiness sector supports farmers and vice versa - all are interconnected parts of the agricultural industry.
2. For farmers to develop and use a voluntary code to look after the land, they need support from the businesses servicing agriculture.
3. For the code to be effective, agribusiness must also support the same principles and adopt these if appropriate (the main principle being “voluntary by farmers for farmers to improve or maintain their land for future generations”).

The main objectives of the agribusiness workshops were, therefore, to inform personnel in this sector about the proposed pastoral code of practice, and to involve them in its development. It was hoped that involvement would encourage ownership or support of the code by the business sector. Identifying ways in which agribusiness could assist farmers develop sustainable farming systems was the third objective. The fourth objective was to build on ideas provided by farmers on what should (not) be contained in the code of practice.

3.4.1 Participants

Personal invitations were sent by the local Federated Farmers President to a range of agribusiness firms prior to the workshops. The letter outlined the process undertaken thus far in developing the code of practice, the purpose of the code and outlined the format of the proposed workshops.

Representatives from the Wairoa District Council, Wrightson, Landcare Research, Wairoa Star (local newspaper) and Federated Farmers (Gisborne region), plus a local veterinarian and eight farmers who were unable to attend their local workshop, attended the Wairoa workshop. Representatives from the Hastings District Council, Hawke's Bay Regional Council, MAF Policy, Farmlands, Ravensdown and local farmers attended the Hastings agribusiness workshop. An introduction similar to that at the farmer workshops was used for both agribusiness workshops.

3.4.2 Method

The farmer workshop format was modified for the agribusiness sessions as shown in Figure 3.5. Participants were not asked to build a concept pyramid, as obtaining further definitions of what comprised "Sustainable Farming", was not an objective for this stage of the research. As stated earlier, the main objective was to raise awareness and involve business personnel in the process.

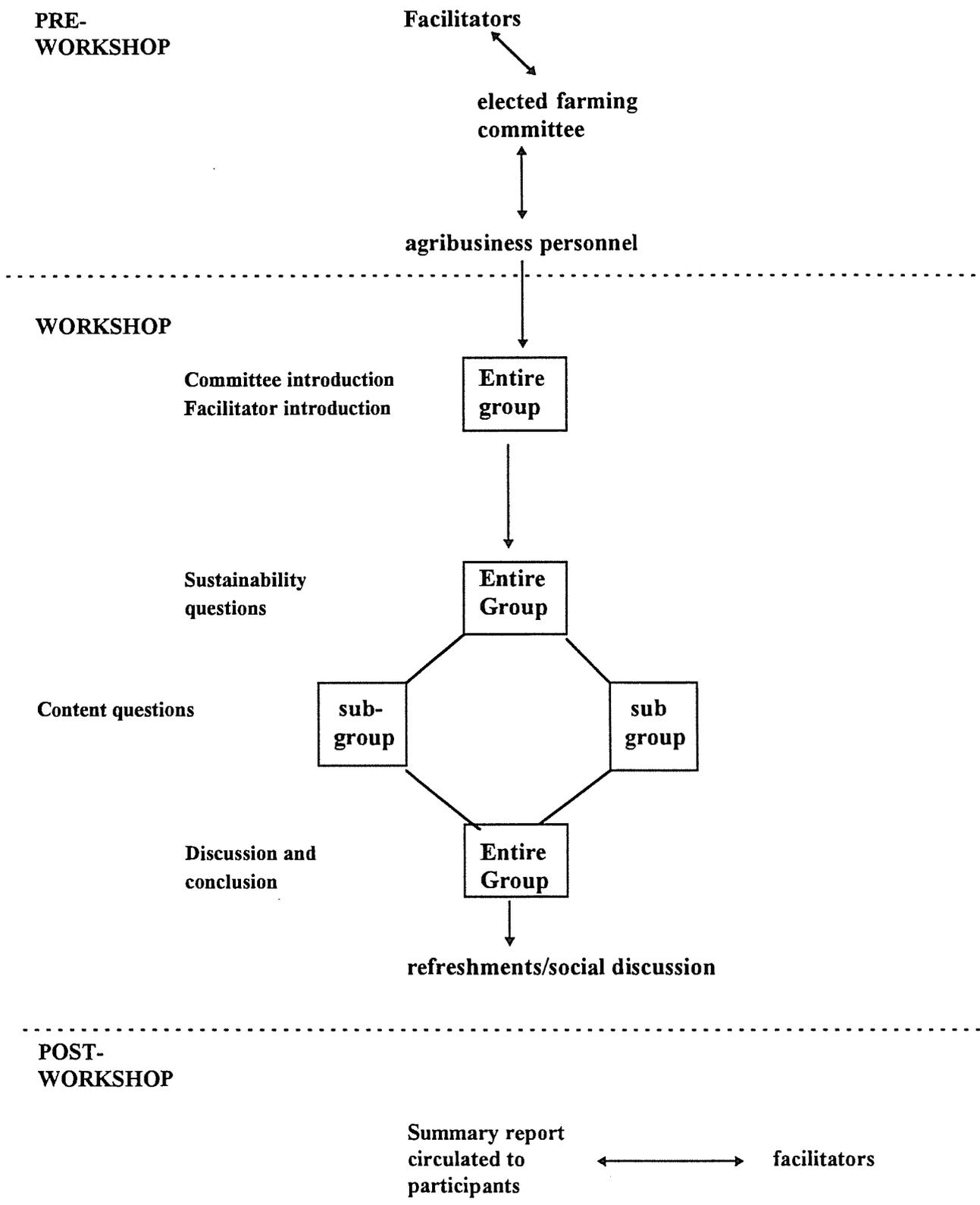


Figure 3.5 : Schematic summary of the process used in the agribusiness workshops.

Workbooks, similar to those developed for the farmer workshops in terms of format were used, but the lead-in questions were altered. (An example of the agribusiness workbook is contained in Appendix Two). The main question used was:

“What are the advantages or benefits to you personally, to your organisation and to Hawke’s Bay or New Zealand from sustainable farming?”

Participants completed the main question after some discussion, then divided into two sub-groups and discussed three further questions:

“What are the important things to have in a code of practice? What should be included in the code of practice?”

“What should not be included in the code of practice?”

“What are some practical ways you or your organisation can be involved in helping farmers become more sustainable (or stay farming in a sustainable manner?) What are some practical ways you or your organisation can support farmers who adopt the code of practice?”

At the sub-group stage the ‘essence of facilitation’ was illustrated and emphasised to the participants, to ensure all had an opportunity to voice their opinions (as was the case in the farmer workshops). The workshops concluded with a spokesperson from each sub-group outlining the discussion and ideas that their group had produced.

The results were compiled and mailed to participants, to obtain comments on the accuracy and interpretation of the data, and provide the opportunity for further ideas to be added. No returns were received from the agribusiness personnel, therefore, it is difficult to assess whether the group were satisfied with the workshop results.

Results from the agribusiness workshops were not added to the farmers’ definition of sustainable farming but were considered in the development of the guidelines for farmers. Their perceptions of what should (not) be contained in the document were used when finalising the document’s format. Awareness raising and support for the proposed code were the main objectives of these two workshops; the facilitators believe that the process was successful in meeting these objectives. A summary of the results from the agribusiness workshops are contained in Section 4.3.

3.5 Conclusions

In this Chapter, the method used in the twelve farmer and two agribusiness participatory workshops has been described. A workshop method to encourage farmer participation and input into the development of a set of guidelines, which they would ultimately implement on their properties, has been described. Results from the workshops are presented in the next Chapter.

CHAPTER FOUR

WORKSHOP RESULTS AND DISCUSSION

4.1 Introduction

The results from the 12 farmer and two agribusiness workshops are detailed in this Chapter. The advantages from sustainable farming, a description, and the components of, sustainable farming, and the suggested management practices to achieve this type of farming are outlined in the first sections of the Chapter. The results are then discussed and compared to the literature reviewed in Chapter Two.

4.2 Results from the farmer workshops

4.2.1 Farmer attendance

A total of 175 farmers, predominantly from sheep and beef cattle enterprises, attended the farmer workshops. The number attending each workshop varied, from four at Maru Maru (Wairoa) to 36 at Sherenden, as summarised in Table 4.1. The average attendance per workshop was 15 farmers.

Table 4.1: Location and attendance at the farmer workshops.

District	No. of participants	Venue
Kereru	7	Kereru Hall
Omakere/Elsethorpe	16	Omakere Hall
Sherenden	36	Sherenden Hall
Eskdale	16	Eskdale Hall
Patoka	9	Patoka Hall
OngaOnga	16	OngaOnga Hall
Porangahau	12	Porangahau Golf Club
Maru Maru	4	Maru Maru Hall
Putere	13	Putere Hall
Ardkeen	19	Ardkeen Hall
Mahia	14	Mahia Golf Club
Putorino	11	Waikere Sports Centre

Of the farmers who attended, 171 (98%) answered the question in the workbook on the advantages that could result from sustainable farming (Section 4.2.2). In ten of the workshops (153 farmers) the concept pyramids were completed. These are detailed in Section 4. 2.5.

Workbooks and concept pyramids were not used at the Maru Maru workshop as attendance was too low (four attended). The second facilitator lead a general discussion about sustainability, and how it might be possible to demonstrate to domestic and overseas customers that farmers are farming in a sustainable manner, or working towards this goal.

The workbook was used only for the “advantage” question at the Mahia workshop. Concept pyramids were not developed as Mr Manson (facilitator) wanted to check the titles of the major concept headings developed at the other workshops. Mr Manson discovered that the participants developed similar headings to those supplied by the facilitators at the other workshops. From this, it was concluded that the headings written by the facilitators were able to encompass all the ideas held by farmers about sustainable farming.

4.2.2 Context for sustainable farming

Farmers described the advantages that they believed they would obtain (or are obtaining) from farming in a sustainable way, as summarised in Table 4.2.

Table 4.2: Advantages from sustainable farming identified by participants in the farmer workshops.

Category	No. of mentions	% of total mentions
Farmer/personal/lifestyle	115	23
Financial/money	105	21
Benefits to future generations	77	16
Land/soil	46	9
Off-farm benefits	36	7
Plants/trees	26	5
Stock/animals	23	5
Environmental considerations	22	4
Water	13	3
Aesthetically pleasing landscape	10	2
Pest and weed control	8	2
Improved farm facilities	6	1
Self regulation	5	1
Air quality	3	<1
Total	495	100

Advantages to the farmer and family that occurred on-farm comprised the majority of responses (91%). The remainder (9%) occurred off-farm and related to community benefits, marketing advantages and reduced off-site environmental impacts. Participants at five workshops were asked an additional question in order to identify off-farm advantages (Section 4.2.3).

Farmers suggested that advantages from sustainable farming applied to all components of the farming system. They indicated that the farmer and family, natural resources (the farm), the community and future generations all benefited from a sustainable farming system. For example, the farmer and family are personally satisfied, have ongoing profitability and are able to pass the farm on to the next generation. The farm also benefits from stable soil, healthy stock and clean water. Off-farm advantages included increased employment and overseas marketing opportunities. The following four comments reflect some of the advantages identified by farmers.

“Still owning a viable proposition for future generations. Healthy livestock which provide reliable financial return. Land which has good soil structure, and free from erosion.” (Sherenden farmer).

“Stable fertile soil. Healthy stock. Sound economic base. The ability to supply certain markets. Clean water.” (Patoka farmer)

“Guarantee of resources available for continued profitability now and into the future. Satisfaction of leaving my farm in better condition than when I brought it. A career for myself, maintaining my ideal of self employment.” (OngaOnga farmer).

“Long term continuity from generation to generation. Preservation of native flora and fauna. Stable land and clean water. Stable community. A satisfying and pleasing lifestyle.” (Putere farmer).

Farmers also commented that advantages from sustainable farming were inter-generational. By farming sustainably, both the current and future generation are able to derive benefits from the farm. Farmers described the current generation (themselves and their family) as: being less stressed and enjoying farming; being more satisfied; having a sense of achievement; and having a good standard of living. As a result, future generations should receive a farm in better or improved condition from the present generation of farmers and their ability to farm is not compromised.

The systems nature of sustainable farming was highlighted by farmers specifying advantages that applied to several components of the system, for example, animals, water and the farmer and family. The relationship between personal stress levels and farm health was identified by a participant at Onga Onga.

“Less stress on myself and my family because less stress on animals and plants and less stress on the land.”

Similarly, a Putere farmer made the following comment about the advantages he would receive from farming in a sustainable manner.

“By running lower stock numbers, all stock do better by less stress and less stress on the ground (soil compaction and plant health).”

Further explanations of each category of “advantages” are presented in the following sections.

Farmer/personal/lifestyle factors

The largest group of advantages mentioned by farmers refer to themselves, their family and their lifestyle (Table 4.3). Farmers who farm sustainably feel more satisfied on a personal level and in their work. “Personal satisfaction” was one of the most commonly mentioned advantages from sustainable farming. The farmers who farm sustainably also feel less stressed and more secure about their future, and able to have an enjoyable lifestyle and good standard of living.

Table 4.3: Personal advantages of sustainable farming identified by farmer participants in the workshops (figures in brackets are the percentage of total mentions).

Category	No. of mentions
Satisfaction	31 (27%)
Lifestyle choice	13 (11%)
Security/stability for the future	10 (9%)
Less stress	8 (7%)
Good standard of living	8 (7%)
Satisfied/comfortable family and home	5
Clear conscience	5
Job security	4
Healthier lifestyle	4

Financial/monetary factors

Financial return and viability were the second most commonly cited group of advantages arising from sustainable farming. The main monetary advantages identified are listed in Table 4.4. The terms used (possibly for the same idea) were very diverse, which made the grouping of ideas difficult. Many other comments were mentioned once.

Table 4.4: Monetary advantages of sustainable farming identified by farmer participants in the workshops (figures in brackets are the percentage of total mentions).

Category	No. of mentions
Long term profit/income	19 (18%)
Profit/income is ongoing	16 (15%)
The value or saleability of the farm or produce is improved	11 (10%)
Better economically; will receive an economic return	10 (9%)
Profit/income is higher	7 (7%)

Benefits to future generations

Farmers thought that future generations would benefit from the current generation farming sustainably. The farm or land will be handed on in an improved state because the resources have been 'looked after' with the future generations in mind. Some farmers commented in reference to their own family (e.g. "*a long term future for our family farm*"), while others made more general statements (e.g. "*leave the land for future generations*"). Comments were also made that sustainable farming is long term. "*Leaving the land/farm in a better or improved state*" was the other most commonly mentioned personal advantage from sustainable farming.

Advantages for the land/soil

Farmers also said they would gain advantages from their farm resources, for example, the land or soil, if these are used in a sustainable manner. Some specified advantages were stable land or soil (e.g. having less erosion), maintained or increased soil fertility, soil structure being maintained and an increased or maintained soil quality.

Off-farm benefits

Farmers mentioned that sustainability advantages apply past the farm-gate to the local community and district. Farmers would personally benefit from a stronger local economy, a stable community, increased employment opportunities, marketing advantages for products and reduced off-site environmental impacts (e.g. reduced flooding and pollution). Off-farm advantages to the community and district are discussed further in Section 4.2.3.

Plants (pasture and trees)

The establishment of pasture and trees to improve farm sustainability was also identified as providing personal advantages to the farmer. For example, farmers expressed this as "*the aesthetic value of my farm planted*", or "*satisfaction of pasture health*", or "*happy seeing good quality pasture*". Many farmers associated on-farm activities such as planting shelter or trees for erosion control, with developing a sustainable farm. Farmers described pastures in a sustainable system as being "*improved and productive*".

Stock/animals

As with the pasture and trees, farmers indicated that they gained personal advantages from farming livestock in a sustainable manner. Farmers described the livestock in a sustainable farming system as being healthy, happy, comfortable, “*less diseased*” and of better quality than those in a non-sustainable system.

Environmental considerations

Farmers indicated that sustainable farming practices must not have detrimental impacts on their and the wider environment. Concepts associated with looking after the environment included minimising any off-farm impacts, keeping a balance between farming and nature, and using environmentally acceptable practices (which were not further discussed). Enhanced water quality and quantity were mentioned by participants as being advantages to the environment.

4.2.3 Community (and district) advantages from sustainable farming

At five workshops (Ardkeen, Putorino, Putere, Onga Onga and Patoka) farmers were asked an additional question to specify the advantages of sustainable farming to their community or district. The second facilitator asked this question of participants, because he wanted farmers “to think past themselves and their own families to others in the community” (P. Manson, personal communications, June, 1996). Table 4.5 summarises the community and district advantages identified by farmers at these workshops.

Table 4.5: Advantages to the community (or district) from sustainable farming (results from a prompted question at five workshops).

Category	No. of mentions
Advantages to the environment and resources	38
Jobs or employment	24
Advantages to the community	23
Improved community facilities or services	23
Financial or economic advantages	14
Local industry or businesses would be advantaged	11
Lifestyle or personal factors	11
Rural population maintained/increased	9

The responses describe a community and district that is continuous, stable and vibrant. Farmers believed that continuity and stability identified at the farm level would be aggregated to the community level. Increased employment opportunities, a stable or increasing rural population, maintenance of the rural school and other community services and facilities were believed to be elements of a vibrant and healthy community. Community spirit and well-being would be maintained if these elements were present.

Less off-site effects to downstream users through the adoption of sustainable on-farm practices would, in the farmer's opinion, lead to an aesthetically pleasing and healthy environment. They cited examples of improved water quality and reduced siltation, retention of native flora and fauna, more shelter and trees, and less damage to community 'resources' after an adverse event as tangible evidence of sustainable farming.

From the farmers' perspective, a sustainable community would also be thriving economically. The on-going income from the land would lead to continued economic well-being for the district through the redistribution of money amongst servicing industries and other institutional support structures. Thus, local industries and businesses, for example freezing works, service industries, town stores and truck firms, would be able to continue operating in the district.

4.2.4 Description of sustainable farming

Rather than formulate a concise definition of sustainable farming, farmers at the workshops identified the components and criteria which describe it. A number of components of sustainability were identified by workshop participants. Concepts related to the components of soil, water, plant, animal and farmers are described in more detail in Section 4.2.5.

By using the number of mentions of advantages from the 'advantage' question (Section 4.2.2), two 'levels' of components for sustainability were identified. The 'primary level' comprises the components cited most often by participants, and on this basis, farm resources such as water, soil and pasture plus the farmer and rural community appeared. The landscape, chemicals and air were at a 'secondary level'. Secondary level components are not necessarily less important, but were mentioned less often by the workshop participants.

Each component in a sustainable system was described in a number of ways. For example, pasture is “healthy, nutritious, productive and diverse”, markets are “diversified and guaranteed”, and the landscape is “aesthetically pleasing”. The components of sustainable farming and their descriptions are illustrated in Figure 4.1.

Using these components, farmers suggested that sustainable farming may be recognised by management practices that result in:

- productive soil;
- sufficient water quantity;
- good water quality;
- productive pasture;
- appropriate trees;
- productive animals; and
- successful, prosperous and flexible farmers.

4.2.5 Components of sustainability

At each workshop, the main group elected which of the major concepts they wished to discuss in more detail in order to develop a ‘picture’ of sustainability (Section 3.3.2). The number of sub-groups at each workshop was determined by the total number of participants. Table 4.6 indicates the concepts discussed at each of the 10 workshops where pyramids were developed.

Table 4.6: Major pyramid concepts discussed at each workshop.

Workshop	Soil	Water	Plants	Animals	Farmers	Money
Eskdale	✓			✓	✓	
Omakere	✓	✓		✓		
Patoka	✓	✓				
Sherenden	✓	✓	✓	✓	✓	✓
Kereru		✓				
Onga Onga	✓	✓	✓			
Porangahau	✓		✓			
Putorino	✓	✓				
Ardkeen	✓		✓		✓	
Putere	✓	✓	✓			
TOTAL	9	7	5	3	3	1

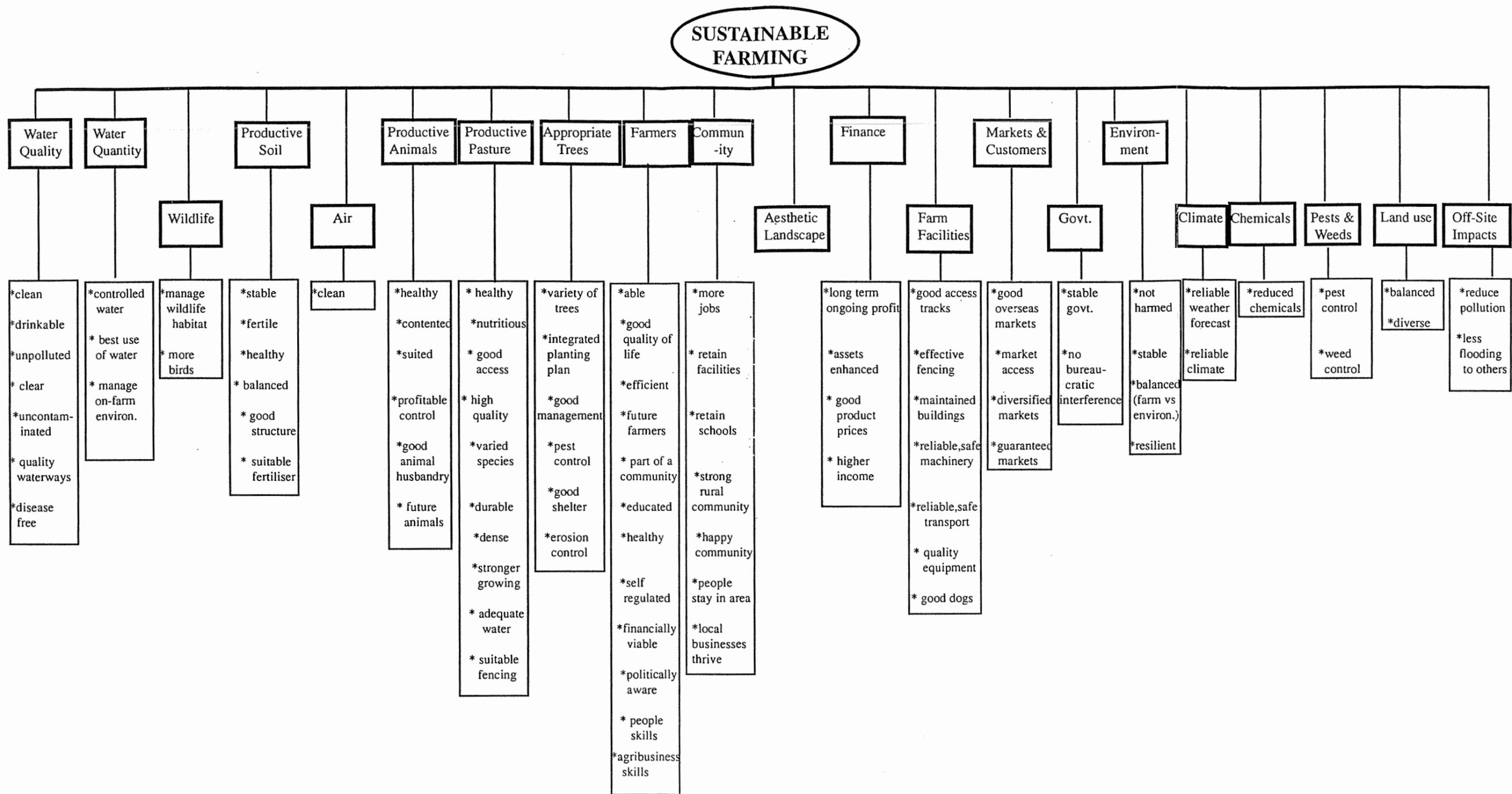


Figure 4.1 The components of sustainable farming as identified by the farmer participants

Participants elected to discuss the major concepts they considered to be of most importance in their district. Soil was viewed as an important resource to the sustainable farming system and was discussed at all workshops, except Kereru. Water and plants (pasture and trees) were identified as other important resources. Animals were not discussed in sub-groups at any of the Wairoa workshops (the reasons for this are unknown). Participants from Kereru elected to discuss water (both year-round availability and good quality), as this major concept is of prime concern to farmers in this area. Issues such as water conservation and wise use were discussed to ensure farmers have adequate supply during the dry summer months.

The soil, water, plant, animal and farmer components are outlined in more detail in the following sections in terms of the concept pyramids developed by the farmers to explain the various levels of management practices.

4.2.6 Soil

The workshop participants' concepts of soil are illustrated in Figure 4.2. The title concept is productive or quality, with major concepts (adjectives) to describe soil being stable, healthy, fertile and balanced. ('Balanced soil' could appear to be similar to 'healthy soil', however these terms differed in the minds of farmers). The sub-concepts describe each major concept, for example, if a soil is friable, has adequate fertiliser, is managed organically and good soil husbandry techniques are applied, it is (by farmers' definition) a 'healthy' soil.

Farmers believed that soil ultimately affects both plant and animal health, but recognised that the converse also applies since stock and pasture management affect soil productivity. Consequently, many of the management practices for healthy, stable, fertile or balanced soil related to pasture and stock management. Management practices identified as resulting in productive soil are listed in Appendix 3.1. These management practices were used as the basis of the Guidelines for Pastoral Farming (Chapter Five). Some examples of the management practices identified by farmers include: re-grassing earthworks on completion; planting shelter belts and pole planting (e.g. gully planting, space planting); recognising and separating different land capability areas by fencing; and soil testing before applying fertiliser.

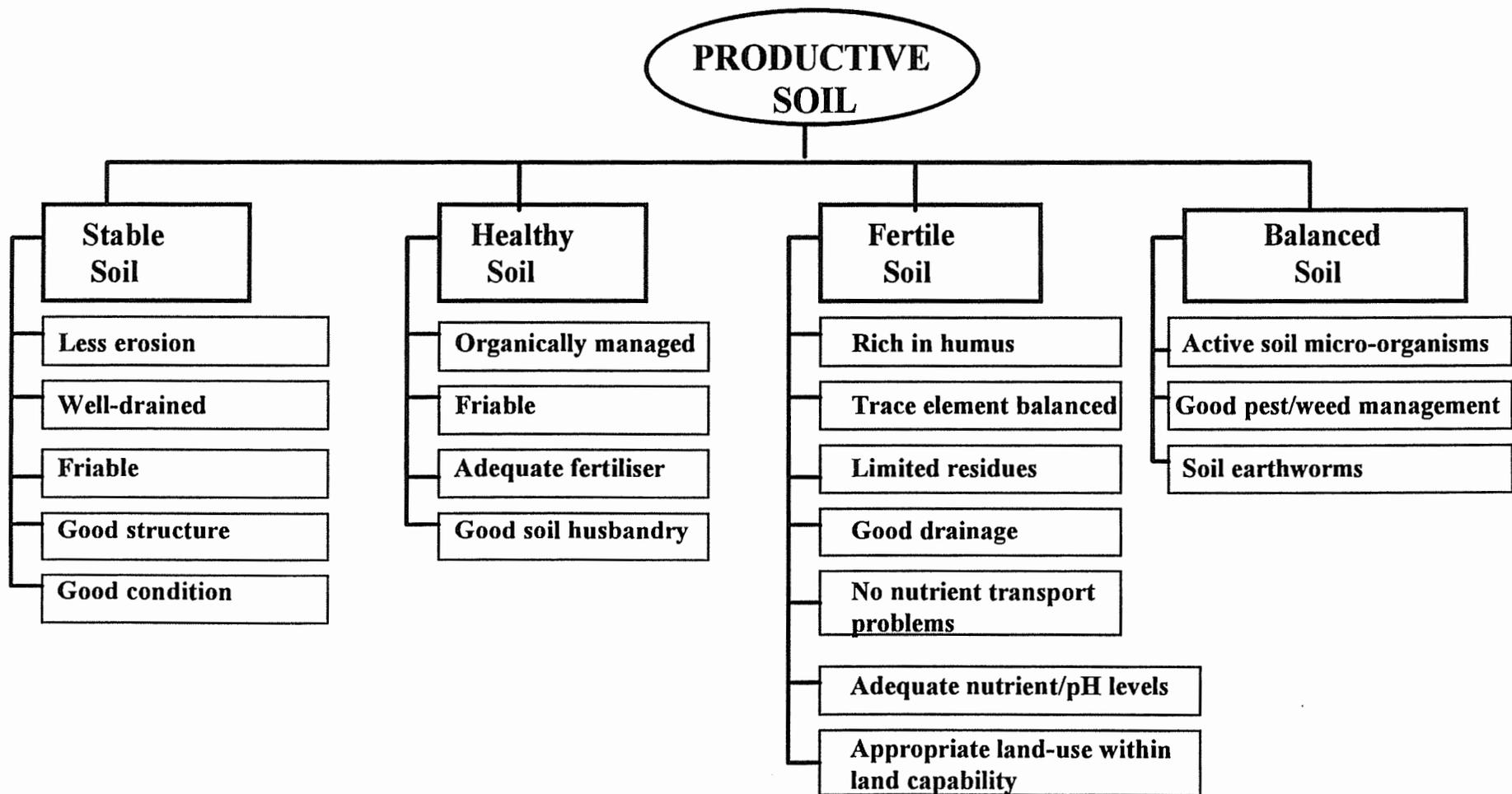


Figure 4.2 : Workshop farmers concepts of productive soils in a sustainable farming system.

4.2.7 Water

The concept pyramids designed by each of the seven sub-groups for water were more diverse than those for the other major concepts. The seven pyramids have been combined to produce Figures 4.3 (water quality) and 4.4 (water quantity).

In all workshops except Patoka, the sub-groups that discussed water covered quality and quantity in conjunction with each other, because these were considered to be of equal importance. In some sub-groups, heated discussion occurred as to whether water quality or quantity was of paramount importance. In these cases, the facilitators helped participants realise that the two concepts could be developed in association with each other.

Water quality

Participants specified a range of major concepts for water quality. Some workshops used the word “potable”, while others preferred the term “drinkable”. Drinkable is used in the Figure overleaf, as ‘potable’ was not a term common to all workshops.

Four of the seven sub-groups discussing water, covered the quality of both livestock and household water supplies. Clean, uncontaminated livestock water was seen to be important for the sustainable production of healthy animals. Maintaining quality downstream water was discussed by one water sub-group (Patoka).

Water quantity

Sufficient water at all times of the year was the prime consideration for farmers. The main ideas developed in relation to this were: ensuring a balanced supply (i.e. controlling excess and storing for periods of dry); ensuring the water was available for all requirements; and managing the on-farm environment (e.g. managing soil moisture) in order to ensure sufficient water was available for all uses.

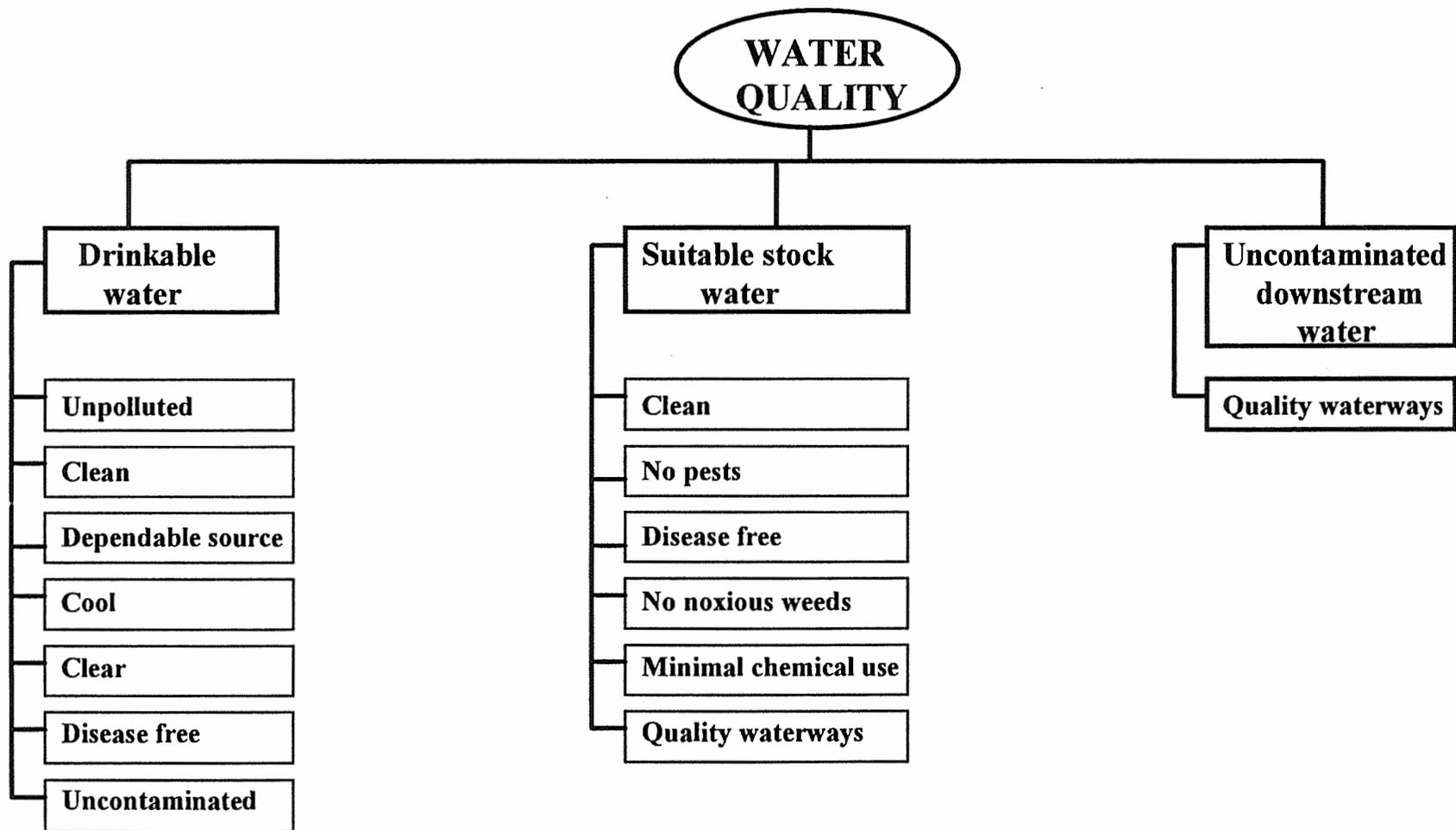


Figure 4.3 : Workshop farmers concepts of water quality in a sustainable farming system.

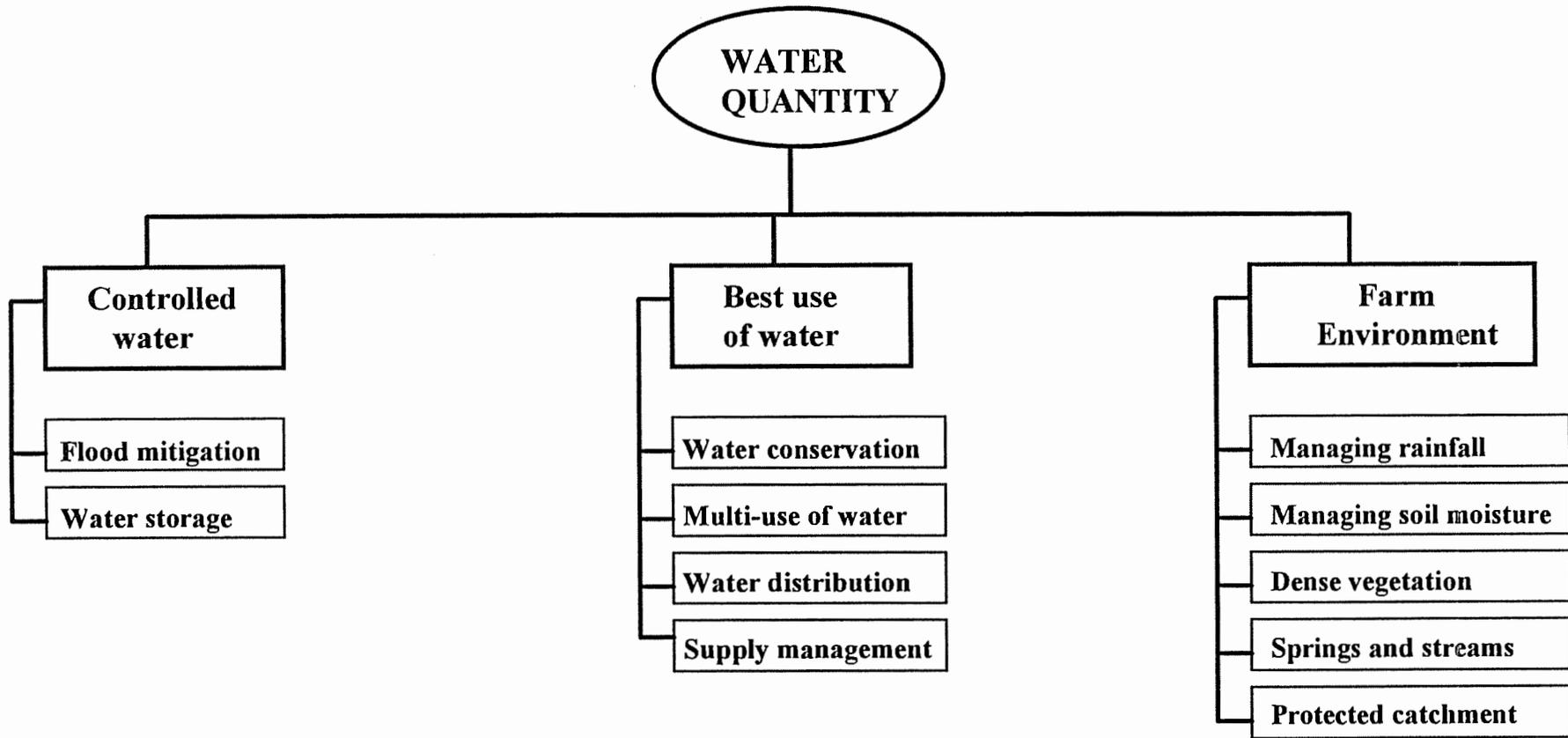


Figure 4.4 : Workshop farmers concepts of water quantity in a sustainable farming system.

The management practices identified to obtain sustainable water quality and quantity that are sustainable are listed in Appendix 3.2 and 3.3 respectively. Examples of practices for 'water quality' included: preventing overstocking above dams; taking care that aerial fertilizer is not dropped into dams; and finding suitable disposal sites for rubbish and dead animals to prevent leaching into water. Examples of management practices for 'water quantity' included: planning the use and needs for water; recycling water whenever possible; and checking pipelines and fittings for an efficient water system.

4.2.8 Plants

The term 'plants' was used by participants to mean both pasture and trees. The concept pyramid for plants is displayed in Figure 4.5. Planting a variety of trees for a range of purposes was the key idea developed by farmers to achieve sustainable vegetation on the farm. For example, planting poplar poles for shade and erosion control, and planting pines for timber were common solutions for generating sustainable plant communities. An integrated planting plan and good management (e.g. silviculture) were other requirements of plant sustainability.

Productive pasture was described in many ways by farmers, for example, "durable, healthy and nutritious". Farmers also proposed that pasture should contain a variety of species to suit a range of conditions, for example, using drought resistant species. Water and fertiliser, plus suitable fencing and access tracks (for stock management), were other requirements suggested for productive pasture. The management practices are listed in Appendix 3.4.

4.2.9 Animals

Farmers described animals in a sustainable farming system as being 'productive' (see Figure 4.6). Such animals are profitable, contented, "future animals" (animals for the future) and managed using good animal husbandry methods. One of the three sub-groups discussing animals elected "good animal husbandry" as their title concept. The other two placed animal husbandry as a major concept, as illustrated in Figure 4.6. The management practices are listed in Appendix 3.5.

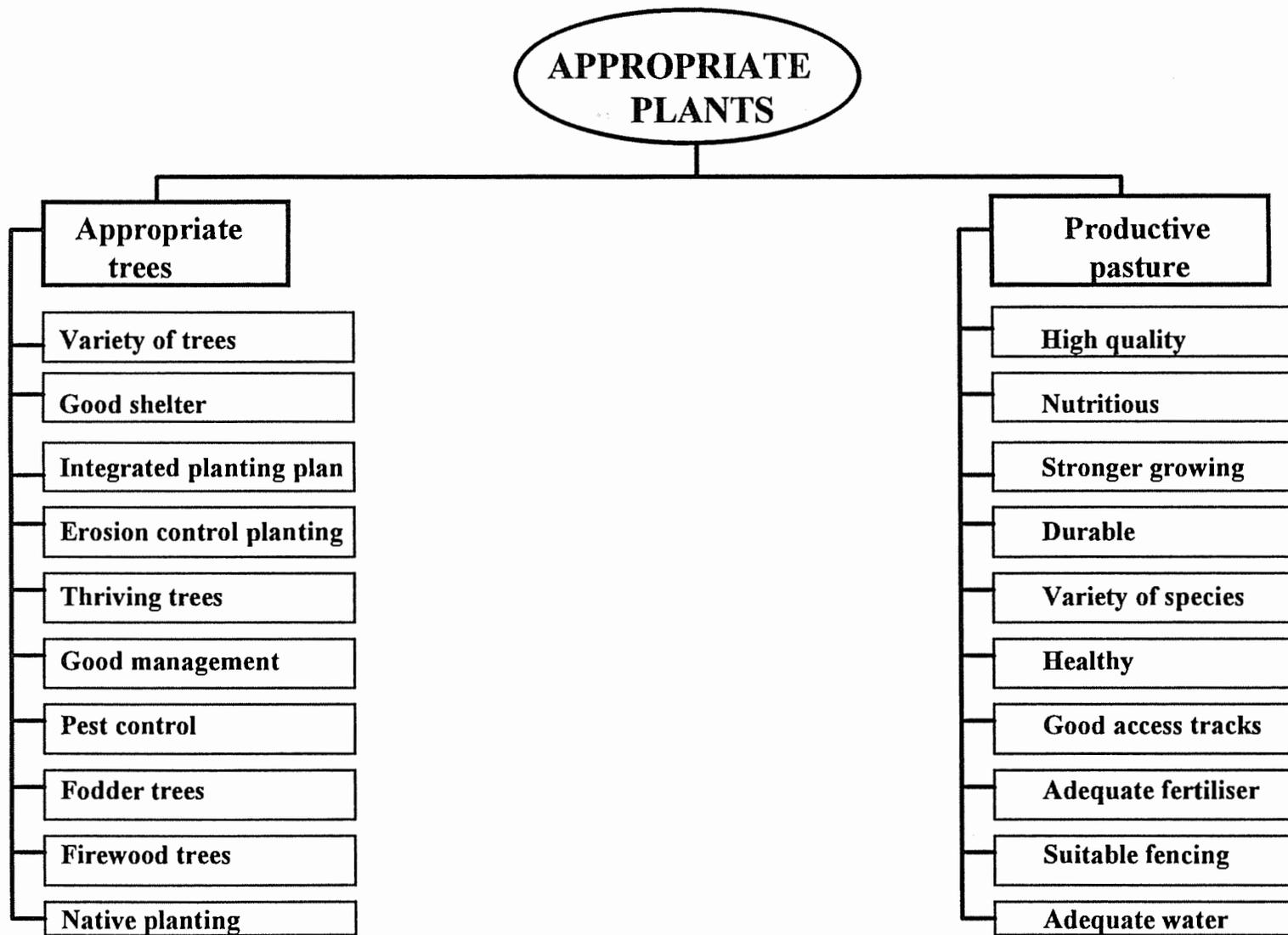


Figure 4.5 : Workshop farmers concepts of appropriate plants in a sustainable farming system.

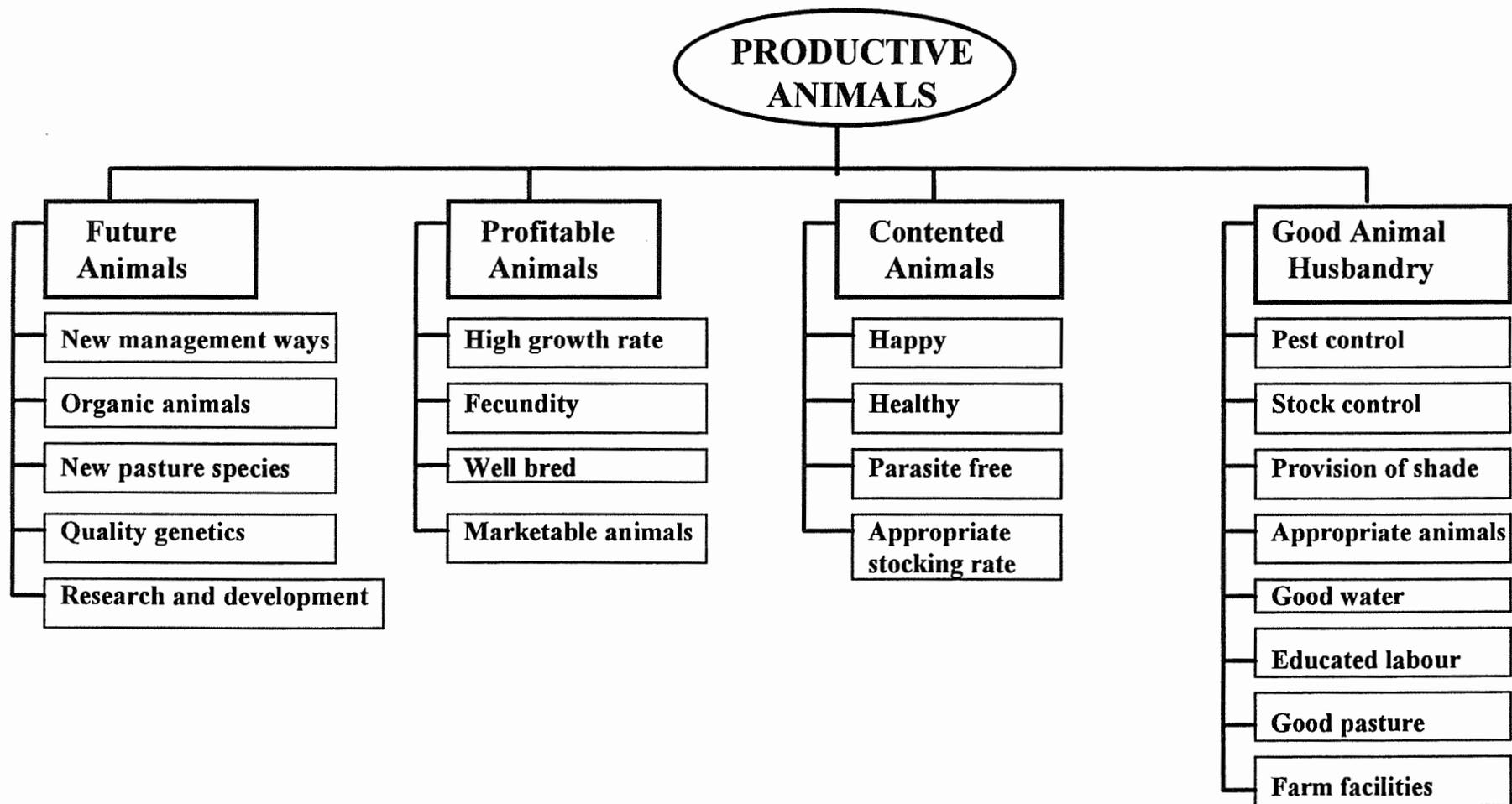


Figure 4.6 : Workshop farmers concepts of productive animals in a sustainable farming system.

4.2.10 Farmers

The main advantages from sustainable farming outlined by participants apply to the farmer and the farmer's family (Table 4.3). The concept pyramid for "farmers" is presented in Figure 4.7. A farmer who is part of a sustainable farming system was described as being successful, prosperous and flexible. This farmer has many qualities which were described in various ways as:

"happy, healthy, unstressed, satisfied, organised, has common sense, sexually active, knowledgeable, tolerant, dedicated, responsible, compatible, confident, caring, honest, profitable, has an open mind, innovative, is informed, has a good lifestyle and is community aware."

A 'successful, prosperous and flexible farmer' also requires many skills. Some of the skills identified by farmers, included: stockmanship; financial and business management skills; multi media and electronic technology skills; and family and community skills.

A 'successful, prosperous and flexible farmer' also needs access to components outside themselves or the family unit. Some of the external factors identified by farmers included: good farm access and on-farm facilities; enthusiastic and conscientious employees; a prosperous local community; and on-going rural services. The farmer also needs to be educated and have access to the latest technology to be able to make informed management decisions. A relationship with the urban sector (i.e. so that the urban sector understands farming decisions); 'bureaucratic-free' farming where farmers are able to operate without imposed regulations; and a strong lobbying organisation to represent farmers' views and opinions are other factors associated with a "sustainable" farmer. A 'successful, prosperous and flexible farmer' also needs a future (described as "*future farmers*" by the Eskdale participants), where the farm can be passed to the next generation.

Suggestions as to how farmers could develop or enhance the characteristics described above are listed in full in Appendix Three, and include: keeping up-to-date and seeking information; going to field days and seminars; and continuing education through, for example, observing MRDC farms.

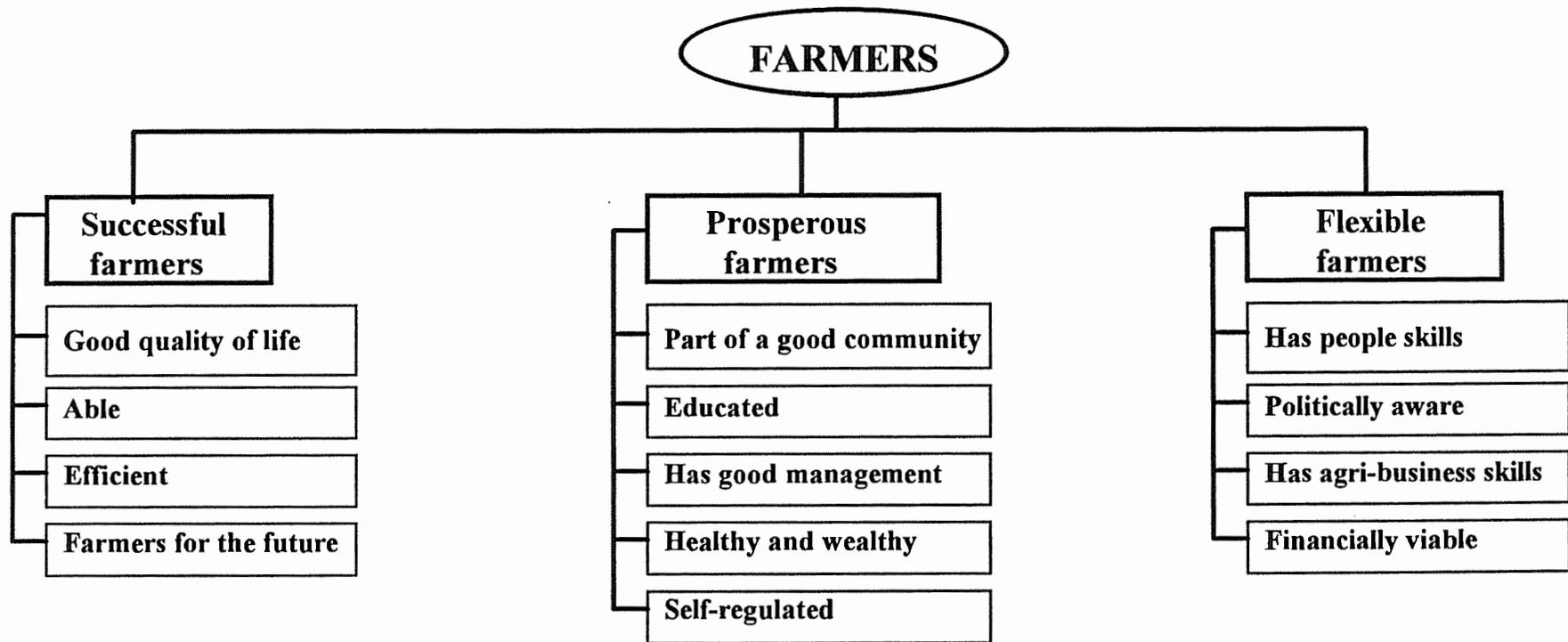


Figure 4.7 : Workshop farmers concepts of the attributes of a ‘sustainable’ farmer.

4.2.11 Management practices

Many management practices were mentioned by farmers as applying to more than one concept pyramid. For example, implementing a soil testing programme to ensure appropriate fertiliser application was specified as a practice for generating productive soil, productive pasture, productive animals (related to pasture) and quality water (by minimising nutrient run-off). Similarly, sound and suitable fencing was a management practice for obtaining sustainable water quality and appropriate trees (stock proof fences around dams and tree plantings), and productive pasture and productive animals (appropriate paddock size for pasture management). Effective pest control was cited as a management practice for achieving clean water (remove pests, such as geese and ducks, from water ways), appropriate trees and productive animals (TB threat from possums).

Appropriate trees, that are well planned (e.g. species, timing and location) and strategically planted, were one concept associated with productive plants. Strategic tree planting was also specified as a management practice for productive soil (shelter and erosion control planting), productive animals (trees for shade and shelter), water quantity (plant trees to maintain summer flow of streams) and water quality (plant waterways).

4.3 Results from the agribusiness workshops

4.3.1 Advantages from sustainable farming

The initial questions regarding advantages of sustainable farming asked at the two agribusiness workshops, differed from those asked at the farmer workshops (Section 3.3.2), although responses were similar. Thus, the Wairoa participants commented on: increasing employment opportunities; local industries remaining; the ability for future generations to farm; and the protection of the local environment.

Satisfaction, on-going profitability and a healthy environment were the main personal advantages mentioned by the Hastings participants as accruing from sustainable farming. This group suggested sustainable farming would also provide benefits to the Hawke's Bay and New Zealand, such as market security and marketing advantages, continuity of business and economic security.

4.3.2 Contents of a proposed code

The agribusiness participants discussed what was to become part of a proposed code of practice for farmers. The discussion was wide ranging and general, with some suggestions being: objectives and benefits of a code; a philosophy on sustainable farming; and information on the farm's resources (for example, soil, water, pastures and livestock).

Participants strongly endorsed the view that the code was a set of guidelines only, and rules and regulations were not appropriate. This type of document was also viewed as a guide to good practice and, as such, prescriptions for land-use on particular land classes, or subjective statements, were not considered suitable.

4.4 Discussion of results

4.4.1 Description of sustainable farming

Through the workshop process, a description rather than a concise definition for sustainable farming was developed. This contrasts with the literature, which to date, has emphasised definitions rather than descriptions of sustainable agriculture. The descriptions produced by farmers are dynamic rather than static and this is a key feature associated with the concept of sustainability in the literature (Campbell, 1991b; Whitehouse, 1992; FAO, 1993; Jiggins, 1994).

The descriptions for sustainability in the literature are more general and less production-focused than those developed by the Hawke's Bay farmers. For example, MAF Policy's paper on sustainable agriculture describes sustainable agriculture in the New Zealand context as practices that are concerned with "maintaining or improving the quality of our natural resources" (MAF, 1993). Farmers suggested that sustainable agriculture may be recognised by practices that result in "good quality water" and "productive soil", two natural resources that are essential for sustainable farming. The farmers' concept of "productive soil" is ultimately concerned with production, but does recognise that unless the soil is "fertile, stable and healthy", it cannot be productive.

Farmers in the Hawke's Bay and Waikato workshops discussed animals as an important component of the sustainable farming system. Animals in these systems were part of the operational definition of sustainable farming developed during the workshops. Interestingly, definitions or descriptions of sustainable agriculture in the literature do not include animals.

Crews et al., (1991) provide a description which is partly similar to that suggested by farmers, and indicate that the maintenance of soil fertility, the preservation of water supplies, the protection of human health and the conservation of species diversity is required if agriculture is to be sustainable over the long-term. However, this description focuses on the ecological component of agriculture and discusses the maintenance of biodiversity, both of which were not discussed by farmers in the present study.

4.4.2 Comparison with other concept pyramid models

Parminter et al., (1993) produced results similar to that developed in Hawke's Bay by using the concept pyramid method with dairy, deer and mixed livestock farmers in the Waikato. Farmers at the Waikato workshops described sustainable farming as being those practices that achieve a balance of:

- efficient farm animals;
- contented farm animals;
- productive vegetation;
- clean water;
- control of feral pests;
- unrestricted market access;
- farmer and farm family health; and
- adequate rural and agricultural services.

The Waikato farmers mentioned unrestricted market access and adequate rural and agricultural services as two of the off-farm components in their definition of sustainable farming. The Hawke's Bay farmers did not include any off-farm components in their definition, yet markets and customers did appear in the 'primary level' of components as illustrated in Figure 4.1. The Hawke's Bay farmers did not develop a concept pyramid for the off-farm component, choosing instead to focus within the farm gate.

Soils were not mentioned in the Waikato farmers' definition of sustainable farming, yet featured prominently in the definition of their Hawke's Bay counterparts. The Waikato farmers developed 'productive soil' as a major concept within the 'productive vegetation' concept pyramid. Parminter et al., (1993) commented that "productive soils were not understood to exist in their own right, they were valued for their contribution to vegetative productivity". When comparing the two components of productive soil, farmers from both regions described productive soil as being "stable, healthy and fertile".

Trees were also not part of the Waikato farmers' definition of sustainable farming. "A visually enjoyable landscape", which comprised mixed plant species, amenity and shelter planting, was a major concept of the productive vegetation concept pyramid for the Waikato farmers. In contrast, the Hawke's Bay farmers described "appropriate trees" as being an integral part of the sheep and beef cattle farming system.

The Waikato farmers developed two concept pyramids for animals ("efficient farm animals" and "contented farm animals"), whereas the Hawke's Bay farmers developed one ("productive animals"). Parminter et al., (1993, p.6) commented that the two sustainability concepts developed by the Waikato farmers "reflected the importance of animals to livestock farmers as the final gauge of a family's and farm's well being. The two concepts also indicated that efficiently produced farm animals may not necessarily be contented in farmers' eyes, and vice versa". The Hawke's Bay farmers listed 'profitable' (which is similar to "efficient" in the Waikato model) and 'contented' on the same level in their concept pyramid, indicating that an animal can be both profitable and contented.

The North Otago Sustainable Land Management Group (NOSLaM) used the concept pyramid process to develop a series of guidelines for sustainable land management in the North Otago downlands region (NOSLaM, 1996). Sheep, beef cattle, and mixed livestock and cropping farmers participated in three workshops and two field days to develop ideas of what sustainable farming meant to them.

The NOSLaM study produced a list of the main concepts of sustainable farming, which included on-farm and off-farm components. These were:

“healthy soils; persistent pasture; productive animals; clean water; good shelter; efficient water use; informed farmers; available training; flexible farm systems; minimum energy use; adequate equipment; happy families; ongoing monitoring; less debt; good advice; good market information; marketable products; diverse enterprises; vibrant communities; and suitable rural services.”

The majority of components, for example “healthy soils”, “productive animals”, and “clean water” were the similar to those identified by farmers in the Hawke’s Bay and Waikato studies. Others, for example, “minimum energy use”, “good advice” and “ongoing monitoring” were specific to the farmers in the North Otago region.

4.4.3 Links between the concept pyramids

The systems nature of sustainable agriculture (Cronin, 1988) is highlighted by the myriad of linkages between the concept pyramids developed by farmers. Some pyramids directly overlapped, while a component of one pyramid sometimes appeared in other pyramids.

Ideas that were major concepts in some pyramids were sub-concepts in others. Stock water is one example of this; it appears as a major concept in the ‘water quality’ pyramid (Figure 4.3) and a sub-concept of animal husbandry in the ‘animals’ pyramid (Figure 4.6). Some sub-concepts appear in a number of pyramids. For example, pest control was identified as a sub-concept of animal husbandry (animals), suitable stock water (water quality) and balanced soil (productive soil).

Some descriptive words appeared in several pyramids to describe a range of resources. For example, productive pasture is ‘healthy’, contented animals are ‘healthy’ and prosperous farmers are ‘healthy’ (see Figures 4.5, 4.6 and 4.7 respectively). Common descriptive words, such as healthy, highlighted the similarities between components in the sustainable farm system.

Some pyramids contain ideas that may apply to one or more pyramids, yet may only appear once. The farm environment was mentioned as being important for water quantity and includes the ideas of managing rainfall and soil moisture levels, retaining dense vegetation, protecting catchments, and providing access to farm springs and streams. These ideas also appear to be important for water quality, although they were not discussed in any detail within this pyramid. Insufficient time may have been a factor in preventing the water quality sub-group further developing the on-farm component of their pyramid.

4.5 Conclusion

This Chapter outlined and discussed results from the farmer and agribusiness workshops, then compared and contrasted these outcomes to the relevant literature. During the farmer workshops, the participants identified the main advantages from sustainable farming that would apply to themselves, their family, their farm and their off-farm environment. From these advantages, farmers identified the main component of sustainable farming and developed a dynamic, rather than static, description for this type of farming. Using the concept pyramid process, the farmer participants suggested management practices that would result in the sustainable use of soil, water, animals and plants in the farming system. The agribusiness workshops provided a medium for informing and involving the agribusiness personnel in the development of the pastoral guidelines.

Chapter Five outlines the process used to produce the Pastoral Guidelines, from the management practices suggested by farmers at the workshops. An evaluation questionnaire was sent to all workshop participants with a copy of the completed guidelines, and the results of this are also discussed.

CHAPTER FIVE

PRODUCING AND EVALUATING THE GUIDELINES

5.1 Introduction

The management practices identified through the farmer workshops (Appendix Three) were used to compile a set of guidelines for pastoral farming in Hawke's Bay and Wairoa. The process used to produce the guidelines, and an evaluation of the content material by workshop participants, is described in this Chapter.

5.2 Production of the guidelines

5.2.1 Funding

After completing the workshops, Federated Farmers recognised the need to obtain external funding to complete the process, as the local provincial offices did not have sufficient finance to support the entire venture. An initial application by the Hawke's Bay and Wairoa Federated Farmers, with support from the Hawke's Bay Regional Council, was made to the Ministry for the Environment's (MFE) environmental fund in October 1994. The application was unsuccessful.

Under the auspices of the national office of Federated Farmers, an application to prepare a sustainable farming resource kit was made to MFE's New Grants Programme in December 1994. The national office of Federated Farmers envisaged that existing provincial initiatives, such as those in the Hawke's Bay and Waikato regions (Section 1.8), would form the basis of the kit, with the Hawke's Bay process acting as a pilot. The application was approved late in December 1994 and funding was made available in early 1995.

5.2.2 Stage One - objective setting and awareness raising

Guideline preparation involved four key stages. Committee members (Section 1.7.5) met in April 1995 and discussed the objectives for the process and a broad content outline. They also developed a strategy to raise awareness and promote the guidelines amongst the farming community and associated service sectors.

The committee members, in preparing the terms of reference for the work, restated the objectives for undertaking the workshop process and development of the guideline. These were:

- to involve farmers (the users);
- to demonstrate to overseas markets, domestic customers and other interested groups that Hawke's Bay farmers are seeking to manage their land and associated resources in a sustainable manner;
- to develop a series of practical management practices to help farmers implement sustainable production systems; and
- to acknowledge current legislation, for example, the Resource Management and Occupational Health and Safety Acts.

Re-establishing the objectives before compiling the guidelines was a crucial start for the committee members. A very dry summer had occupied the minds of the farming committee and farmers, and a break of several months between meetings required all members to re-focus on the task at hand. An analysis of pre- (Section 1.7.5) and post-workshop objectives provides an interesting comparison. The post-workshop objectives were more finite and measurable; this may be because the committee members were more focused in their thinking by that stage and had developed a tangible perception of the completed document of guidelines. Adding "the involvement of farmers" to the objectives, highlighted the value obtained from the participatory workshops.

A content outline for the guidelines was also established by the committee to provide a structure within which the guidelines could be written. The key elements of the guidelines were identified as:

- establish the accepted ways to do things (options);
- supply reasons for doing things;
- provide suggested ways of doing things, and
- acknowledge current legislation.

A promotional campaign to raise farmer and wider community awareness of the pastoral guidelines was established. Only a small percentage of farmers in Hawke's Bay attended the workshops, thus not all were aware of the completed guidelines. The promotional campaign involved several stages. A range of media were utilised, including: letters to workshop participants and relevant local territorial authorities (all letters were signed by the president of Hawke's Bay Federated Farmers and the Chairman of Wairoa Federated Farmers); newspaper press releases; a radio interview; radio news items; newspaper advertisements; and conference briefing papers. Keeping workshop participants involved and informed at all stages of the development of the guidelines was the underlying theme of the promotional campaign. It was anticipated that workshop participants would network with others in their communities, and that this would become an effective method for informing others about the guidelines and their purpose.

An initial letter was sent to all workshop participants on 19 December 1994 to inform them of the application made to MFE's grants programme. A second letter was mailed on 2 May 1995 to inform participants of the successful application to MFE, and also provided contact details for the committee members and a brief outline on the proposed method of producing the document.

Personal letters outlining the workshop process, the successful fund application and progress to date were mailed on 12 May 1995 to the General Manager (or Chief Executive) of the Hawke's Bay Regional Council, Wairoa, Central Hawke's Bay and Hastings District Councils, and the Napier City Council.

A press release was prepared and sent to the local newspapers (Daily Telegraph, Herald Tribune, Wairoa Star and Central Hawke's Bay Mail) in early May. At the same time, a conference briefing paper was prepared for the Hawke's Bay and Wairoa Federated Farmers annual conferences, in order to inform delegates of the process and progress to date.

5.2.3 Stage Two - preparation of the first draft

The first draft of the guidelines was prepared during April and May from the management practices identified through the farmer workshops. The manuscript was sent to the five committee members, who met and discussed the content and format of the guidelines in late May. The committee members found it difficult to agree on some aspects of the content, for example, the level of detail in the 'animals' section, and this required skillful facilitation and the use of consensus decision making to maintain the project's progress (Section 2.3.7). The committee members also found it difficult to keep focused on each stage, as the task of writing such a wide reaching document with multiple objectives often seemed overwhelming. Returning to the objectives, re-established at the outset of the guideline writing process, enabled the group to work together more effectively.

Preparing a Code of Practice was the initial purpose of the participatory workshops. The document was envisaged to be similar to other codes of practices, such as that prepared for forestry by the Logging Industry Research Organisation (LIRO, 1993). During the workshop process, many farmers commented that the document should not contain rules and regulations, but rather guidelines which would help them adopt sustainable management practices. Consequently, the committee elected to change the name of the document from a Pastoral Code of Practice to Pastoral Guidelines to better reflect the emphasis of the document. A Pastoral Code of Practice was envisaged as a document with a set of practices to achieve a specific outcome, whereas guidelines were perceived as being more general and suited to achieving a range of outcomes. All workshop participants were informed of the name change in the second letter and invited to comment on this by contacting members of the farming committee. Farmers who took the opportunity to comment on the proposed title were supportive of the name change.

5.2.4 Stage Three - the consultation stage

Changes recommended by the farming committee to the first draft were incorporated in the second draft. This was circulated amongst the committee members for checking before it was made available for public consultation.

A third letter was sent to all workshop participants on 23 May informing them of the availability of the guidelines for comment. A tear-off section with the Hawke's Bay Federated Farmers freepost address was included at the bottom of the letter for participants to request a copy of the draft document. Participants were encouraged to comment on the draft to ensure that the document accurately reflected information collected through the workshops.

Over a one and a half week period in late May, a second press release and further advertisements were placed in the local newspapers (as listed above) to inform the wider public of the document's availability. Again, contact details to obtain a copy of the document from the Hawke's Bay Federated Farmers office in Hastings were provided.

The farming committee also identified 14 key stakeholders who could provide a perspective on the draft guidelines. A copy of the draft and a covering letter was sent to a member representative from each stakeholder. Stakeholders included: the regional, district and city councils; MAF Policy; Department of Conservation; Ministry for the Environment; Landcare Research; Farm Forestry Association; Gisborne Federated Farmers; AgResearch and Agro-Research.

5.2.5 Stage Four - the submission process

The MFE's funding criteria required the project to be completed by 30 June 1995. Three weeks were given for the public to read and make comments on the draft document. Many commented that "*this was not enough time*", but nothing could be done to alter the time constraints. In total, 64 copies of the draft document were requested. This included requests from 35 workshop participants who had sent back the tear off slip from their letter (17 % of participants).

Fifteen submissions were received, with most being supportive of the approach taken by Federated Farmers. Only four of the 35 workshop participants who requested a copy of the draft provided written comments. The farming committee surmised that *“the draft was what the farmers expected and it was what they had discussed at the workshops, so there was no need to comment any more”*. No follow-up survey was conducted to determine whether this was true.

The majority of submissions suggested minor changes to the text rather than changes to the philosophy or rationale of the document. The farming committee considered all submissions, and through consensus decision making, changed the text to improve the accuracy, applicability or readability of the guidelines.

One stakeholder had a different perspective of the final document than that held by the farming committee. The Hawke’s Bay Regional Council commented that they believed the guideline was meant to be a “true guideline related to the withdrawal of the Hill Country Erosion Plan” and identified a “true guideline” as being similar to the New Zealand Forest Code of Practice (LIRO, 1993). Further comments in the same submission were that the guideline document needed to:

- promote preferred management and operational practices;
- contain certain performance standards that could be monitored and measured over time;
- contain simple tables, charts and figures to illustrate preferred management and operational practices; and
- not repeat technical material that is more fully covered in other available documents (as most of Part II of the draft guidelines document does) (Hawke’s Bay Regional Council, 1995).

The farming committee did not believe a 'formal' document (as proposed by the Hawke's Bay Regional Council) was required at this stage and commented that "*the guidelines were prepared by farmers for farmers, rather than by farmers for the Regional Council*". Some farmers (and some members of the farming committee) were concerned that the process and document could be "*hi-jacked by the authorities for their own use*", and therefore, were wary of involving other agencies and planning organisations.

The difference in perceptions amongst members of the community as illustrated by this example, highlights the need to clearly establish the objectives and purpose of sustainable land management projects and to actively involve all stakeholders in the consultation stage. While farmers were consulted and did participate, other stakeholders may have felt "*their opinions were not considered equally in the process*". In hindsight, wider consultation may have helped in the preparation of the guidelines, although it may have compromised the outcomes from the viewpoint of farmers, the intended major end-users of the document. Farmer participation fulfilled the committee's objectives, and the Hawke's Bay Regional Council may not have been aware that obtaining the pragmatic commitment of farmers to design and implement sustainable land management practices was a key objective of the project.

5.2.6 Stage Five - production

The final draft of the guidelines was edited by an experienced journalist and a foreword prepared by the president of Hawke's Bay Federated Farmers. Following a final perusal by the farming committee, 200 copies of the document were printed.

The guidelines were structured into two parts and were contained within an A4 die-cut folder with a printed cover. Part One incorporates workshop participants' ideas and knowledge of current 'best practices' for sustainable farming in the Hawke's Bay region. Practical management practices for soil and land, water, pasture and animals are therefore contained in Part One. Part Two contains technical fact sheets and brochures and provides further information on the practices suggested in Part One. A copy of the text from the guidelines is included in Appendix Four.

The document was entitled:

“Guidelines for Pastoral Farming in Hawke’s Bay” (main title)

“Best practices for addressing today’s environmental concerns” (sub-title)

The title for the written material was not clearly established at the outset of the process (Stage One) and this proved to be a contentious issue amongst the members of the farming committee (see Section 5.2.3). Production was halted for many days while the committee members discussed which title best reflected the content of the guidelines. The change from a Pastoral Code of Practice to Pastoral Guidelines was made in order to encompass the general content and multiple objectives of the document. If the draft had been circulated for comment with the final title, the differences in opinion about this aspect of the project may not have arisen.

A complimentary copy of the guidelines was sent to each workshop participant, MFE, the committee members, the head office and each provincial office of Federated Farmers. Funding was only sufficient to print 200 copies of the guidelines and 300 folders (empty). Copies of the guidelines were made available for sale at \$5.00 (GST incl.) to cover the cost of photocopying and postage. A local newspaper article informed the wider public that the guidelines could be purchased from Federated Farmers in Hastings.

5.2.7 Wider public recognition

The Pastoral Guidelines were nominated for a 1995 MFE Green Ribbon Award in recognition of “their significant contribution to improving the environment” (Award, 1995). The Green Ribbon Award is a way of publicly thanking those people who have shown outstanding initiative and effort to preserve and improve New Zealand’s environment (Award, 1995). The Pastoral Guidelines were one of two Green Ribbon Award winners in 1995, and this culminated a successful participatory process for developing an operational resource management plan.

5.3 Evaluating the guidelines

5.3.1 Method

An evaluation of the guidelines was carried out among all workshop participants for three main reasons, namely:

- to provide feed back on participants' opinions of the guidelines;
- to indicate if a next stage was needed; and
- to suggest direction(s) for the next stage.

A questionnaire and covering letter was sent to all workshop participants with a copy of the completed guidelines. The letter outlined the objectives of the guidelines and stressed the confidentiality of the survey findings. The questionnaire comprised 14 questions and asked respondents about their expectations of the guidelines, ideas for further information and suggestions for the next stage of the process (a copy of the questionnaire is included in Appendix 5).

The guidelines and survey were posted to 174 participants in mid-July 1995, but only 14 completed questionnaires (8% response rate) were returned by the specified date (8 August). The questionnaires were numbered to check returns and a reminder letter, a copy of the questionnaire and the Federated Farmers' freepost address was posted to non-respondents in late October 1995. A further 24 questionnaires were received, to give a combined response of 39 (22% response rate). An incorrect or changed address prevented the delivery of four envelopes.

The 22% response rate is relatively low for a postal survey. Parker and Hughes (1989) commented that a response rate of 50-75% can be expected from a well-executed mail survey. For example, a postal survey by the author to poplar and willow clients of the Hawke's Bay Regional Council in 1993 yielded a response rate of 79 % (Grey, 1993). The respondents to this survey were predominantly sheep and beef cattle farmers, with similar land use and farming systems to the workshop participants.

The reasons for the low response rate from workshop participants are difficult to assess. However, since all except one respondent were positive about the content of the guidelines and the workshop process, it would seem that farmers were happy with the guidelines in their present form. The close consultation and participation of farmers in the preparation of the guidelines provides credence to this viewpoint.

The single respondent with a negative response commented:

“I thought the whole workshop and guidelines too elementary and made me feel like a schoolboy!”.

5.4 Results of the evaluation survey

5.4.1 Expectations of the guidelines

Participants were initially asked for their expectations of what the guidelines would contain after reading the title. Respondents then suggested what should not be contained in a set of guidelines.

A link between pastoral farming and “looking after the land”, and an emphasis on practical actions, were the main ideas suggested by respondents. It was also suggested that the guidelines could involve practices for sustainable land use or how the farm will impact on the surrounding environment. The following comments from three respondents highlight this theme.

“I would expect to find aspects of pastoral farming that need consideration to maintain productivity and sustainability”.

“I would expect a list of ideas to assist in making farming decisions in relation to their effect on the environment.”

“I would expect ways to farm in conjunction with the land.”

Readers also expected the document to contain scientific facts, recommendations or suggestions for practical practices (*“the doing”*) to be provided in a brief, simple, easy to understand format.

When asked what should not be contained in a set of guidelines, rules and regulations were the main response (12 respondents). Other suggestions included: inaccurate information; impractical suggestions and too much detail.

The third and fourth questions in the survey asked respondents if the guidelines were what they had expected, and why this was the case. The majority (85%) agreed that the guidelines met expectations, as the content reflected what had been discussed at their workshop. As stated by one farmer:

“The guidelines reflected what came out in the sessions held - a broad cross section of ideas from different age groups of farmers.”

The guidelines differed from the expectations held by four respondents, who wanted either specific advice or prescriptive practices for sustainable farming. However, the majority of farmers did not expect specific detail in the document.

5.4.2 Content of the guidelines

Some farmers who viewed the draft document commented to members of the farming committee that the guidelines were *“not heavy enough and needed more substance”*. Three questions were designed to discover if this perception was widespread amongst farmers and to determine why the content was viewed in this manner. It was perceived by the critics that the ‘light weight’ of the document referred not only to detail, but also to whether the guidelines would stand up to scrutiny from ‘outside organisations’ (for example, planning authorities) or external customers.

The majority (34 respondents) considered the document was “about right” and qualified this response with comments to support their view that the content was sufficient for today’s farming conditions. Nevertheless, the content may need to be revised in the future in order to accommodate changes in market circumstances and legislative requirements. As commented by one farmer:

“Guidelines are all about getting farmer cooperation. Issuing “tough” regulations would not get any interest or support from farmers!”

Details within the guidelines were discussed by the respondents and one commented that, *“These are guidelines - specific information can be obtained from other organisations (as in part two)”*. The majority of respondents, however, were happy with the level of detail and considered excessive detail on such a wide ranging topic would be confusing to end-users. They also suggested that excessive detail could reduce the document’s readability. Thus, one farmer commented, *“ if there was too much detail, it would be too heavy a read”*.

However, four respondents considered the guidelines were “too light”, and commented either on the lack of specificity or that the information was too basic. One farmer made the following comment.

“It is pretty basic stuff. Farming is my profession and I find some of it insulting. Are farmers ignorant?”

When asked if the ideas or suggestions for sustainable land management practices were specific enough (i.e. contain enough detail), 27 respondents answered in the affirmative with eight wanting more detail. Four respondents did not answer the question. Of the four farmers who commented that the document was “too light”, three of these also commented that they wanted more detail.

From the answers to the previous questions, it was apparent that some farmers expected (or wanted) specific and detailed guidelines for sustainable farming practices suitable for their property. In contrast, others expected a guide from which they could plan practices that would best suit their venture and resources. It would be difficult to meet the expectations of both groups in one document, other than offering a general guide and suggesting sources of further information. A series of more specific guidelines could be developed for local farming areas in the future (for example, district defined through climate-based or resource-based information).

5.4.3 Fact sheets and information

Respondents were asked which topics (or fact sheets) in the guidelines needed to be supported with more (or less) information or detail. Suggestions for other information or fact sheets were also sought.

Twelve respondents suggested fact sheets or topics within the guidelines that required more information. The answers were all specific single responses, for example, information on replanting new pasture species, getting the correct mix of animals, filter systems for water purification and the release of nitrogen due to the cultivation of pasture. Nineteen respondents did not answer the question and a further eight indicated that no further information was required.

All except one respondent did not identify any sections with too much information or detail. The one respondent who commented otherwise indicated that the watercourse fact sheet was impractical, as water would be impeded during a flood, therefore causing more flooding.

Respondents were also asked to suggest other topics that were not currently covered in the guidelines. Suggestions for other information or fact sheets were wide ranging, from specific on-farm details to wider farming issues. Some of the on-farm requests included information on: establishing new pasture species and pasture management; identifying soil types and their best uses; fencing strategies for better stock control; and aids for identifying grass 'types'. The wider requests included information on: district councils; the effect of forestry on neighbouring farms; the relationship between sustainable farming and economics; animal welfare; and occupational health and safety issues. One respondent recommended the addition of a basic bibliography on sustainability topics (the farming committee elected not to include a bibliography) and another suggested more detailed references should be provided to assist them identify sources of further information.

5.4.4 Using the guidelines

To gauge how the guidelines would be used, participants were asked to suggest some of the ways that they planned to utilise the document. Planning future projects on the farm was expected to be one main use for the guidelines. Comments from respondents included:

"I will use them to clarify my thinking when planning for the farm."

"For larger term planning that needs careful input."

Farmers indicated that the guidelines would also be used as a discussion document and for sharing with others, and one participant mentioned he would give them to his staff for training purposes. A comment by one participant encompassed these responses:

"I will use them as a reference document, also, as a discussion document when arguing with others about what should be done."

Specific on-farm uses were mentioned by three respondents. These were: the water and land clearing information; using professional help to establish fertiliser use and culvert construction; and using the section on "fencing ideas" when developing a grazing unit. Further more general uses for the guidelines were as a reference point for local organisations, a source of contacts for further help, and general information on sustainable land management.

Four respondents stated that they already operated the guidelines in their current farming practices and one respondent indicated that he would not use the guidelines in their current form.

5.4.5 Follow-up

Involving farmers in the process for developing guidelines for sustainable land management was an important objective in the research, and it is recommended that further development of material in this domain for farmers should continue. Four questions were posed to participants about the follow up stage, namely: “Is there a next step?” “What will this step be?” “Who should be involved in the next step?” and “What will their roles be?”

The majority of farmers (27) considered that there were further steps beyond the completion of the guidelines, while nine believed the process was completed. Most made suggestions of what the next step should be. Some of these refer directly to the guidelines, while others incorporated the principles for promoting sustainable farming. On-going participation of parties involved in sustainable land management was an underlying theme in the suggestions made for the next stage.

Awareness and promotion of the guidelines amongst all farmers (and lifestyle block owners) in Hawke’s Bay was identified by farmers as being the first follow-up step. One respondent recommended a series of articles in the local newspaper and another suggested that all farmers should receive a copy. A third suggested the development of an award for farmers who provide examples of positive sustainable farming, or to publicise examples of this type of farming.

Education of farmers and the public was another follow-up step identified by the respondents. Some methods suggested for achieving this were: using focus farms such as McRae Trust in Wairoa; incorporating and demonstrating the guidelines in the Farmer and Farm Forester of the Year competitions; and using education officers to visit farms and talk with farmers (this comment referred directly to Occupational Safety and Health Act and spray drift issues, and the respondent did not elaborate on what was meant by “education officers”).

Monitoring and reviewing the guidelines was identified as another component of 'the next step'. Suggestions ranged from "continual monitoring and review" to "monitoring at two year intervals" to "reviewing in 3 to 5 years time". Monitoring to assess the effectiveness of the guidelines and how they have helped to improve farming practices, was the main theme of comments in this category.

Altering the layout or format of the guidelines was suggested by two respondents. It was suggested that the material could be published in a more convenient form (for example, a ringbinder), with a more interesting layout, greater use of illustrations, more thought provoking headings and a more extensive reference list.

The final question of the evaluation survey asked respondents to suggest who should be involved in the next stage and what their role(s) should be. Responses to this question are presented in Table 5.1.

Table 5.1 Groups who should be involved in the next stage of the process of developing and disseminating guidelines for sustainable land management.

Participant	No. of mentions	Role
Farmers	14	Feedback on new ideas; the practical angle
Regional Council	12	Information, plans
District Council	10	Information, plans
Federated Farmers	7	Information, coordination, distribution
Scientists (e.g. AgResearch, Landcare, University)	7	Latest research and development
Farm foresters	5	Advice and examples of on-farm planting
Farm advisors	5	Advice on best practices; use of research information
Veterinarians	3	Expert opinion on animal health
Teachers (polytech, schools)	3	Teaching the next generation (environmental issues)
Environmentalists	2	Encourage debate, another opinion
The general public	2	Obtain their opinion
The media	2	To promote the document
The writer	2	Writing the document
Stock firm/meat co. reps	2	Stock preparation and marketing
DOC and MFE	2	To provide an environmental perspective

Other more general comments were also made about those who should be involved in the next stage, for example, “*involve everyone in farming*”, “*those with a stake in the industry*” and “*have the same as before*”. Landcare groups, the Small Farmers Association, the Society of Farm Management, a farming economist and the meat industry each received a single mention.

A comment by one farmer at the bottom of his questionnaire encapsulated the feelings of many farmers involved in the process.

“The guidelines have in essence endorsed what is good sound practical farming procedure which is also the most profitable and sustainable. They encourage us to think before we act. Practicality encourages compliance, and these guidelines are practical.”

5.5 Conclusion

The management practices identified by farmers at the farmer workshops were combined to produce a set of pastoral guidelines for Wairoa and Hawke’s Bay farmers. The workshop participants, stakeholders and the general public were involved in the consultation process to continue the participatory approach utilised in the workshops.

All workshop participants were sent a complimentary copy of the pastoral guidelines and a questionnaire. The survey aimed to assess the participants’ perceptions and usage of the guidelines, as well as gauge farmer interest and obtain direction for follow-up work. In broad terms, the guidelines met the expectations of farmers and were viewed as being useful for encouraging discussion about, and implementation of, sustainable farming practices.

The concluding Chapter discusses how well the research objectives were met, the workshop method and describes stages of the concept pyramid process that require close attention by facilitators. Further research is suggested, based on the suggestions made by participants in the guideline evaluation.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

Fourteen facilitated workshops were held with farmers and agribusiness personnel in the Hawke's Bay during July and August 1994. The workshops were held to involve participants in the development of guidelines for pastoral farming in Hawke's Bay and Wairoa, using the "*by farmers for farmers*" approach. The 12 workshops with farmers were used to develop an operational description of sustainable farming and identify the main components of sustainability. Through the concept pyramid technique, farmers identified key management practices to achieve the goal of sustainable farming. Involving the agri-business sector was the main objective of the remaining two workshops, to encourage support by this sector of the guidelines and of the farmers who would implement them.

A farming committee was elected to represent the views of farmers, and work with the consultant commissioned by Hawke's Bay Federated Farmers to produce the pastoral farming guidelines. The development and publication of the guidelines was funded by a grant from the Ministry for the Environment's 1995 Sustainable Management Fund. The management practices identified by farmers were written in successive drafts, until a final version was circulated for public comment and submission. Workshop participants were involved and informed at all stages of the process, thereby ensuring that farmer participation and input was maintained.

The overall aim of the research reported in this thesis was to develop a process for land user' participation in the development of resource management guidelines, in order:

1. To develop a resource user definition of sustainability in pastoral farming; and
2. To study a participatory approach to the development of resource guidelines.

In this concluding Chapter, the success in achieving these research objectives, the main workshop results, and areas that require the attention of the facilitator are discussed. Suggestions for the follow-up stage of the research are also discussed.

6.2 Discussion of the research objectives

The research method used was successful in achieving the first objective as farmers were able to participate in a process, in a manner, that respected their opinions and encouraged their ownership of the final outcome(s). The process was community-based, and therefore, organised and “owned” by the community it sought to involve and represent.

Many resource management consultation processes are organised by agencies rather than the community. A draft document may be presented for discussion rather than inviting participants to be involved from the outset. Although not directly measured, farmer attendance at the workshops appeared higher than that previously noted for other resource management development processes (for example, meetings run by territorial authorities to present a draft plan). The author also noted many ‘new’ farmers at the workshops (i.e. farmers who do not usually attend resource management meetings), and this illustrated the importance of the topic to many farmers. It also suggests that the steps to encourage participation were successful.

Farmers developed a dynamic description of sustainable farming, which to them was practical, understandable and obtainable. The description is specific to the Hawke’s Bay farming systems it represents, and it seeks to be implementable at the farm-level.

6.3 Concept pyramids

The process of constructing a concept pyramid allowed participants direct involvement in the workshop, generated considerable discussion, and provided a framework for systematically working through the complex topic of sustainability, which has a direct effect on their livelihood. Thus, the process is very different to the traditional approach of developing ideas or plans for resource management independently of end-users. In this respect, many farmers are yet to become familiar with the facilitative approach to planning and public meetings which allows them to express their views and to debate those of others who are in attendance.

The process must be presented in a manner that makes all participants feel comfortable, and therefore, encourages them to contribute. This requires skillful facilitation and the ability of the facilitator to: adjust their presentation and style to the composition of the group; deal with conflict or misinterpretation in an open and honest way; and create an atmosphere within which all participants feel confident that their opinions will be respected and received in a positive manner.

The concept building methodology reported in Chapter Three, and modified from that developed by Parminter et al., (1993), was effective in all of the workshops where it was used (12). For example: the “good family car” example used in Waikato was replaced with the more relevant example of “buying a good farm bike”; a summary was introduced at the end of the sub-group stage; participants were encouraged to discuss the initial questions with their neighbours and the “writing ideas down” steps were altered to account for farmer literacy levels.

During the concept pyramid building process, participants placed similar ideas near each other to help with sorting (Section 3.3.2). However, participants often did not add their idea onto another already posted, and the facilitators were unable to gauge the number of times each individual idea was cited. The frequency that each concept was mentioned would have indicated the importance of that idea to the community. If issue identification is important to the process, facilitators need to re-emphasise that all ideas are posted or ask participants to ‘tick’ or mark the main sheet of newsprint to indicate they also developed this concept.

6.4 Role of facilitators

The facilitators were local, well-known, and respected in their respective communities. They were also well-versed in land management and sheep and beef cattle production, and therefore, understood and were able to freely discuss the ideas presented by farmers. This proved to be an important factor in encouraging farmers to attend and participate in the workshops, especially in districts where they had previously had negative experiences with planning authorities.

Park (1993) commented that successful participatory research required the researcher to know the community “personally as well as scientifically” before starting the research work. He further commented that in an ideal situation, the researcher should live in the community and partake in its affairs. The present study confirms Park’s views. Agencies who use ‘outside’ consultants to undertake local community work should note this factor.

6.5 Setting clear objectives

It is crucial that participants receive accurate information about the purpose of a workshop before attending, so that they arrive with an awareness of the objectives and outcomes expected from the process. The organiser of one workshop told participants they “*would be told about a new set of rules that would control their farming activities*” in order to motivate locals to attend, because “*he wanted his workshop to have the most people, and therefore, be the best*”. The participants at this workshop had a different perception of the workshop’s purpose and many came expecting a confrontational situation. The workshop was difficult to run, some participants were dissatisfied with the result, and others were negative about the process. This example of how not to promote a workshop for participatory consultation, illustrates that the objectives and outcomes of the process need to be clearly and positively established with stakeholders at the outset. The objectives should be confirmed and discussed with the group wherever possible to ensure ownership and acceptance. Writing out the workshop objectives and placing these in a visible place in the meeting hall, is an important first step in achieving a positive atmosphere for a workshop.

6.6 Awareness of farmer literacy skills

Consensus must be reached on decisions to be made, and a high level of participation in the concept pyramid building achieved for people to be happy with, and hence have ownership of the workshop outputs. A high level of participation was achieved by allowing workshop attendees the opportunity to contribute both verbally and in a written form. The concept pyramid method relies on a certain literacy level, yet not all participants have the same level of reading and writing ability. The facilitator must be able to adapt the process to suit all participants. Three workshop’ examples will be used to demonstrate the importance of flexibility.

Not all farmers feel comfortable sitting within a large group or writing in public, and all participated more freely and were more relaxed working in sub-groups. Encouraging farmers to work with neighbours can help overcome early feelings of discomfort.

In one workshop, an older farmer who could not read was unable to contribute to the process. He felt alienated, was not prepared to let others know of his inability to read, was disruptive, and eventually walked out of the workshop. Another farmer at the same workshop who had dyslexia was unable to write his contributions on the pieces of paper provided, yet worked with his neighbour and shared his ideas in this manner. The facilitator needs to reinforce that discussing ideas and working with neighbours is acceptable during the first stage of the process, and should avoid placing participants in situations where they are unable to contribute. This requires experience and close observation of the body language of group members, yet not singling out those who are not actively contributing. Eye contact and a small nod to those who appear uncomfortable is often sufficient to demonstrate that the facilitator is aware of their discomfort.

Some farmers felt embarrassed at their poor spelling or illegible handwriting, particularly when others in the group made jokes of mis-spelt words. It is crucial for the facilitators to emphasise that spelling and neat handwriting is not important. For this reason, the facilitator often mis-spelt a word on purpose or asked the participants for help with spelling to emphasise this point and placed farmers at ease. However, legible writing of name and address details is important as a few early reports from workshops were returned with incorrect address details. Consequently, the facilitator should check the participant list and confirm any queries before the workshop closes.

6.7 Participants' evaluation of the workshop process

Manson (1994) undertook an evaluation of farmer participation in the workshop process for the Kellogg Rural Leadership Programme. A randomly selected sample of 20 farmer participants were interviewed by telephone to assess the workshop's effectiveness in achieving participation and consensus in the planning process. Participants were asked: what they liked and did not like about the workshop; whether they had an opportunity to have input; whether they considered it was a good method for obtaining ideas; and if they enjoyed the sub-group stage.

Manson (1994) indicated that the main things that participants liked about the workshop process was that it “*created a lot of discussion*”, “*everyone had their say*” and “*it stopped people domineering*”. Participants also liked the smaller group size and considered that the workshop provided an effective means of gathering ideas as there was good interaction and discussion. However, participants also commented that there was “*no definite direction to get answers in the sub-group*”; “*many points were irrelevant*” and “*some questions were superficial and trivial*”. Other issues included that it was too simplistic, it was unfocused and that “*it didn’t get down to the basics quickly enough*”.

The experiences reported in Manson’s and this study suggest that it is important to move quickly through the introductory stages yet be able to clearly describe the process. Some farmers in this study commented that too much time was spent on the introduction without making progress. Similar comments were made regarding the “Good Farm Bike” example (i.e. it was irrelevant and took too long). In fact, the example took less than five minutes to complete, provided the first opportunity for participant input, and demonstrated the concept pyramid process with a readily understood example. When an example was not used to introduce the pyramid process, more time was taken before participants understood what was needed at the sub-group level and to grasp the notion of the concepts.

6.8 Concluding a workshop

The conclusion of the sub-group stage provided an effective opportunity to hold a forum for further discussion. Many ideas were philosophical rather than practical, but this highlighted the ability of the process to enable farmers to share their philosophical thoughts. Farmers were able to participate more at the sub-group discussion stage than at the outset of the workshop, even though both were as a main group.

Opportunity for social interaction at the end of the workshop proved to be an effective way to conclude the workshop. Discussion continued over “a cup of tea” and many excellent practical ideas were discussed amongst the participants and with the facilitator at this point. It was not uncommon during this time to see groups of farmers standing by a wall chart and further discussing the ideas they had developed. The social break also allowed facilitators to relax and meet farmers on a less formal basis. Those who were not as comfortable in expressing their ideas during the main group stage, often approached the facilitator on a one-to-one basis at the concluding stage of the meeting.

6.9 Workshops as a learning opportunity

Unexpectedly, the workshops provided an effective learning forum for participants as the facilitators did not specifically undertake an experiential learning component. As Manson (personal communication, August 1996) commented in relation to his work: *“We didn’t tell them anything - they learnt from each other. The environmental subject hasn’t been discussed over the fence before and you don’t find farmers talking about it, but it is a big issue. Maybe they don’t know how to broach the subject”*. Many farmers commented in Manson’s (1994) survey, that the learning experience was one thing they liked about the workshop. Similar learning outcomes from workshops were noted by Reid and Stewart (1993), Gaffney (1993) and Parminter et al., (1994), and appeared to occur in our work as well although the amount of learning was not measured.

Khatoonabadi and Bawden (1993, p.527), commented that workshops are designed to gather and exchange experiences and information among farmers. The exchange *“would promote solidarity among farmers, focus on common issues and problems, as well as looking for the answers collectively. From the exchanges, farmers would get the power to work together on some issues that needed to be resolved in the community.”* Similar outcomes were noted in this study, as the farmer workshops provided an opportunity for farmers to discuss practical management practices and the solutions they had developed.

6.10 Effective sub-group size

Sub-group size proved to be an important element in the dynamics of constructing a concept pyramid. If the sub-group exceeded 10 people, not all had the opportunity to participate freely and express their ideas. If sub-groups comprise less than five members there are insufficient participants to provide a diversity of ideas and viewpoints to generate discussion. Sub-groups in the workshops in this study ranged from five to seven farmers, and this proved to be a successful size. Reid and Stewart (1993), who organised Property Management Planning workshops in Queensland reported a similar finding in relation to group size. These authors discovered that the most successful workshop groups in terms of discussion were those with six to eight land-users, and those which comprised members who are already interacting socially and who had similar physical property resources and farming enterprises.

6.11 Agribusiness Workshops

The workshops run in Wairoa and Hastings with agribusiness staff from the retail and servicing sectors, were less well attended than anticipated by the facilitators, and the workshop results were not as specific as desired. The primary objective of the agribusiness workshops was to involve this sector, in encouraging and working with farmers to achieve sustainable agriculture. Although personal invitations were sent to staff in a number of agribusiness organisations many did not attend. The reasons for this are unknown, but one factor may have been that those who were invited were not aware of the guidelines, and therefore, did not have a sense of the commitment already developed by farmers.

6.12 Further research

The participatory rationale utilised thus far in developing practical guidelines for sheep and beef cattle farmers to achieve sustainable management must be continued. Many stakeholders were identified by the workshop participants (Table 5.1) and all need to be included in the next stage of the guidelines' development. The next stage should comprise one or more of the following:

1. Monitoring the effectiveness of the guidelines. Some research questions could include:
Have the guidelines been used by farmers? What have the guidelines been used for?
Have farmers changed their management practices to incorporate the guideline information?
2. Promoting the guidelines and the concept of sustainable farming to Hawke's Bay farmers and agribusiness personnel who did not attend a workshop.
3. Involving farmers in developing the next level of detail for the guidelines. A partnership with researchers should be developed to allow free exchange of ideas and information between stakeholders. A process for developing the next level of detail could be piloted with a community group (for example, a Landcare group) who would specify management practices suitable to achieve sustainable farming at the farm and community level. This may involve the community in developing a vision for what they want their environment to look like in 15-50 years, and deciding which management practices will get them to this point. This process could then be adapted to best suit other communities in other parts of Hawke's Bay.

6.13 Conclusion

Sustainable agriculture is a complex multi-dimensional concept and apparently difficult to implement and measure in practice. The purpose of this research was to move beyond the present emphasis on offering purely theoretical definitions of sustainability, to developing workable solutions at the farm-level. It was believed that this objective required the active participation of farmers in developing guidelines which were practical, affordable and implementable on their properties. Farmer input was successfully achieved through a workshop format and by utilising a hierarchical pyramid to translate mental ideas to word form.

Farmers' ideas were then able to be translated into guidelines which were positively received by the land-users who had not attended the workshops. While the participatory process is slower and more expensive than the "top-down" approach, more pragmatic and acceptable recommendations for end-users result, and this is an important element in achieving sustainable pastoral farming. The process described in this thesis, therefore, provides a model which others can consider as a means of developing guidelines which have the broad consensus of the community to which they are applied.

REFERENCES

- Allen, P., Van Dusen, D., Lundy, J., & Gliessman, S. (1991). Integrating social, environmental and economic issues in sustainable agriculture. American Journal of Alternative Agriculture, 6, (1), 34-39.
- Annabell, R. (1993). Resource management act may dictate hill country planting. Rural News. November 22.
- Arnstein, S.R. (1969). A ladder of citizen participation. Journal of the American Institute of Planners, July, 216-224.
- Australian Standing Committee on Agriculture and Resource Management, (1993). Sustainable agriculture. Tracking the indices for Australia and New Zealand. (Report No. 51). Victoria, Australia: CSIRO.
- Award recognises initiative and effort (1995). Environment Update, 47, p2, Ministry for the Environment.
- Berry, S.J. (1993). An overview of the relationship between the RMA and other related legislation. The RMA - One Year On. Institute for International Research Conference, Auckland, New Zealand.
- Blaschke, P.M., Dickinson, K.J.M., & Roper-Lindsay, J. (1992). Defining sustainability - is it worth it? In P. Henriques (Ed.), Sustainable land management. The proceedings of the international conference on sustainable land management, Napier, New Zealand, 17-23 November 1991, (pp. 181-186). New Zealand: Simon Printing Co.
- Bradsen, J.R. (1992). Soft sticks or hard carrots - sustainable land use regulation. In P. Henriques (Ed.), Sustainable land management. The proceedings of the international conference on sustainable land management, Napier, New Zealand, 17-23 November 1991, (pp. 65-76). New Zealand: Simon Printing Co.
- Bradsen, J.R. (1994) Legislating for sustainable land management: An imposition or a necessity? Proceedings of the 1994 New Zealand Conference on Sustainable Land Management, 12-14 April, Canterbury, New Zealand, 99-104.
- Campbell, A. (1991). Planning for sustainable farming. Victoria, Australia: Lothian.
- Campbell, A. (1992a). Community participation - a new frontier in land management. In P. Henriques (Ed.), Sustainable land management. The proceedings of the international conference on sustainable land management, Napier, New Zealand, 17-23 November 1991, (pp. 18-27). New Zealand: Simon Printing Co.

- Campbell, A. (1992b). Taking The Long View In Tough Times - Landcare in Australia. National landcare facilitator's third annual report, November 1992. New South Wales, Australia: National Soil Conservation Programme.
- Campbell, A. (1992c). Community participation - the "catch" in catchments. Catchments of Green. A National Conference on Vegetation and Water Management, Adelaide, March 1992, A, 165-171.
- Canadian Round Tables, (1993). Building consensus for a sustainable future. Guiding principles. Canada: Environment Canada.
- Chamala, S. (1990). Establishing a group - a participative action model. In S. Chamala & P.D. Mortiss (Ed.), Working together for Landcare. Group management skills and strategies, (pp 13-38). Queensland, Australia: Australian Academic Press Pty. Ltd.
- Ching, D.R. (1993). Facilitation: A process for 21st century decision making. Proceedings of Australia Pacific Extension Conference, Surfers Paradise, October 1993, 2, 574-576.
- Collins, H.M. & Wilkinson, R.L. (1995). A study of farmers in the siltstone and mudstone areas, Hawke's Bay. Attitudes towards and beliefs about land management. Unpublished report, Hawke's Bay Regional Council, Napier.
- Crews, T.E., Mohler, C.L. & Power, A.G. (1991). Energetics and ecosystem integrity: The defining principles of sustainable agriculture. American Journal of Alternative Agriculture, 6, (3), 146-149.
- Cronin, K. (1988). Ecological principles for resource management. Wellington: Ministry for the Environment.
- Cumming, B. & Erol, C. (1993). Inclusive extension techniques for ethnically diverse farmers. Proceedings of Australia Pacific Extension Conference, Surfers Paradise, October 1993, 2, 347-350.
- Dicks, M.R. (1992). What is sustainability? American Journal of Alternative Agriculture, 7(4), 191-195.
- Donaldson, C. (1994). Working in multistakeholder processes. Evaluation and Interpretation Branch, Environment Canada.
- Dymond, W.D., Dymond, J.E. & Frost, F. (1993). A review of participatory planning for sustainable agricultural land use in Western Australia. Proceedings of Australia Pacific Extension Conference, Surfers Paradise, October 1993, 2, 487-491.
- Federated Farmers, (1996). Members Policy Handbook, February 1996. Wellington: Author.

- Food and Agriculture Organization of the United Nations, (1993). FESLM: An international framework for evaluating sustainable land management (World Soil Resources Report No. 73). Italy: Author.
- Gaffney, J. (1993). Overcoming the disillusioned learner problem in farm economics training. Proceedings of Extension Conference - Gearing up for the Future, Rockhampton, February 1993, 1, 195-197.
- Gliessman, S.R. (1990). Quantifying the agroecological component of sustainable agriculture: A goal. In S.R. Gliessman (Ed.), Agroecology: Researching the ecological basis for sustainable agriculture, (pp366-370). New York: Springer-Verlag.
- Grey, H. M. (1993). A survey of poplar and willow clients, November 1993. Unpublished report, Hawke's Bay Regional Council, Napier.
- Grundy, K.J. (1993). Sustainable development - an emerging paradigm? Proceedings of the New Zealand Geography Conference, August, 1993.
- Hamblin, A. (1992) The challenges to sustainable agricultural systems. Unpublished seminar to departmental staff at the Roseworthy Campus, South Australia, August 26, 1992. Unpublished.
- Hawke's Bay Regional Council (1993). Regional hill country erosion control plan. Proposed September 1993, Hawke's Bay Regional Council, Napier.
- Hawke's Bay Regional Council (1994). Withdrawal of the hill country erosion control plan, internal memorandum, (15 March 1994), Hawke's Bay Regional Council, Napier.
- Hawke's Bay Regional Council (1995). Regional policy statement. Hawke's Bay Regional Council, Napier.
- Howard, T., Baker, H.R. & Forest, L.B. (1984). Constructive public involvement. In D.J. Blackburn (Ed.), Extension handbook. Processes and practices, (pp. 100-114). Canada: University of Guelph.
- Hunter, D., Bailey, A. & Taylor, B. (1992). The zen of groups. A handbook for people meeting with a purpose. New Zealand: Tandem Press.
- Jiggins, J. & Shute, J. (1984). Participation and community action. In D.J. Blackburn (Ed.), Extension handbook. Processes and practices, (pp. 115-123). Canada: University of Guelph.
- Jiggins, J. (1994). Sustaining the land: Community visions, family goals, getting the know-how. Proceedings of the 1994 New Zealand Conference on Sustainable Land Management, 12-14 April, Canterbury, New Zealand, 119-122.

- Khatoonabadi, A. & Bawden, R. (1993). The medium is the message: Towards a new philosophy and method of grassroots 'extension'. Proceedings of Australia Pacific Extension Conference, Surfers Paradise, October 1993, 2, 524-530.
- Lacy, W.B. (1993). What is sustainable agriculture? American Journal of Alternative Agriculture, 8, (1), 40-45.
- Logging Industry Research Organisation, (1993). New Zealand Forest Code of Practice, (2nd ed.). New Zealand: Author.
- Lussigne, A.H. (1994) Sowing the seeds of sustainability - the potential of participatory rural appraisal in Scotland. A dissertation presented for the degree of Master of Science, University of Edinburgh, Scotland.
- Manson, P. (1994). Community involvement in rural planning. An evaluation of farmer participation. Unpublished study carried out in fulfillment of phase II, Kellog Rural Leadership Programme, Course XII, 1994.
- Manson, P. & Grey, H.M. (1994). Whole farm planning courses for land managers. Proceedings of the 1994 New Zealand Conference on Sustainable Land Management, 12-14 April, Canterbury, New Zealand, 419-422.
- Meister, A.D. & Weber, J.A. (1991). Encouraging sustainability in agriculture: Institutional and measurement considerations. A paper prepared for the Australian Agricultural Economics Society Annual Meeting, Armidale, New South Wales, February 1991.
- Ministry for the Environment (1994). Environment 2010 Strategy. Wellington.
- Ministry for the Environment (1996). Sustainable land management. A strategy for New Zealand. Wellington.
- Ministry of Agriculture and Fisheries (1993). Sustainable agriculture for present and future generations. Wellington.
- Ministry of Agriculture and Fisheries (1995). Farm monitoring report, north central region, June 1995. Wellington: Author.
- Moran, W., Blunden, G., Bradley, A. & Workman, M. (1993). Sustainable agriculture and family farming. Proceedings of the New Zealand Geography Conference, August 1993.
- New Zealand Planning Council (1977). Town and country planning bill. Wellington: Author.
- Norcott, J. & Chamala, S. (1993). Community participation in rural development programs: Issues for developing countries. Proceedings of Australia Pacific Extension Conference, Surfers Paradise, October 1993, 2, 640-642.

- North Otago Sustainable Land Management Group, (1996). North Otago sustainable land management guidelines.
- Oxford Dictionary (1984). The Australian pocket oxford dictionary, (2nd ed.). Melbourne, Australia: Oxford University Press.
- Park, P. (1993). What is participatory research? A theoretical and methodological perspective. In P. Park, M. Brydon-Miller, B. Hall, & T. Jackson (Ed.), Voices of Change. Participatory Research in the United States and Canada, (pp. 1-19). USA: Bergin and Garvey.
- Parker, W.J. & Hughes, A.H. (1989). An introduction to agricultural surveys. Department of Agricultural and Horticultural Systems Management, Massey University.
- Parminter, T., Wedderburn, L., & Carter, J. (1993). Waikato regional workshops on sustainable agriculture. A partnership approach by Federated Farmers, AgResearch and Environment Waikato. Facilitators report. Hamilton: New Zealand Pastoral Research Institute Ltd (AgResearch), Whatawhata.
- Parminter, T.G., Wedderburn, M.E., Carter, J.C. & Paine, M.S. (1994). Attitudes and beliefs of Waikato farmers to sustainable agriculture. Proceedings of the 1994 New Zealand Conference on Sustainable Land Management, 12-14 April, Canterbury, New Zealand, 179-184.
- Randerson, T. (1991). Empowering framework rather than a blueprint. Lawtalk, 356, 4-5.
- Rayner, T. (1990). The seeds of change. In R. Sandrey and R. Reynolds (Ed.), Farming without subsidies. New Zealand's recent experience, (pp. 10-21). Wellington: MAF Policy.
- Reeve, I. (1990). Sustainable agriculture: Ecological imperative or economic impossibility? A review of overseas government policy and implications for Australian agriculture. Australia: Rural Development Centre, University of New England.
- Reid, T. & Stewart, L. (1993). Processes of property management planning workshops - experiences in South East Queensland. Proceedings of Australia Pacific Extension Conference, Surfers Paradise, October 1993, 2, 429-434.
- Squires, V. (1991). Can we achieve sustainable development? Australian Science Mag, 1, 18-20.
- Sriskandarajah, N., Bawden, R.J. & Packham, R.G. (1990). Systems agriculture - a paradigm for sustainability. A paper presented at the Ninth Annual Farming Systems Research/Extension Symposium, University of Arkansas, Fayetteville, Arkansas, U.S.A., October 9-11, 1989.
- Statistics New Zealand, (1995). Agriculture statistics 1993. Wellington: Author.

- Swepson, P., Cliffe, N., Grant, S., Lewis, M., O'Sullivan, D. & Parish, E. (1993).
 Producer consultation on a state-wide issue - A model for the future. Proceedings of
 Australia Pacific Extension Conference, Surfers Paradise, October 1993, 2, 393-395.
- Valuation New Zealand (1994). Data for the year ending June 1994.
- Visser, R. (1994). New Zealand forest code of practice: working towards best possible
 forest management. Proceedings of the 1994 New Zealand Conference on Sustainable
 Land Management, 12-14 April, Canterbury, New Zealand, 379-382.
- Wardie, K. (1994). Involving stakeholders in regional planning to achieve more
 sustainable land use in the high country, South Island, New Zealand. Proceedings of the
 1994 New Zealand Conference on Sustainable Land Management, 12-14 April,
 Canterbury, New Zealand, 384-388.
- Websters Dictionary (1955). Websters new twentieth century dictionary of the english
 language, (2nd ed.). New York: The World Publishing Company.
- Whitehouse, I. (1992). Challenges to improving the sustainability of rural land uses.
 Unpublished paper presented to a sustainability seminar organised by the Maruia
 Society, Wellington, 1992. Landcare Research, Lincoln.
- Wilkinson, R.L. & Barr, N. (1993). Community involvement in catchment management.
 An evaluation of community planning and consultation in the Victorian Salinity
 Program. Victoria, Australia: Department of Agriculture.
- World Commission on Environment and Development (1987). Our common future.
 London: Oxford University Press.

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SUSTAINABLE AGRICULTURE WORKSHOP

Facilitated by:

Peter Manson

Heather Grey

(Hawkes Bay Regional Council)

About this workshop

The purpose of this workshop is:

- to collect as many ideas as possible about what sustainable farming should mean
- what should be included in a pastoral code of practice.

The outcome of the workshop will be a series of practical management practices or things you know can be done to help you be more sustainable. These practical management practices will then form the basis of a pastoral code of practice.

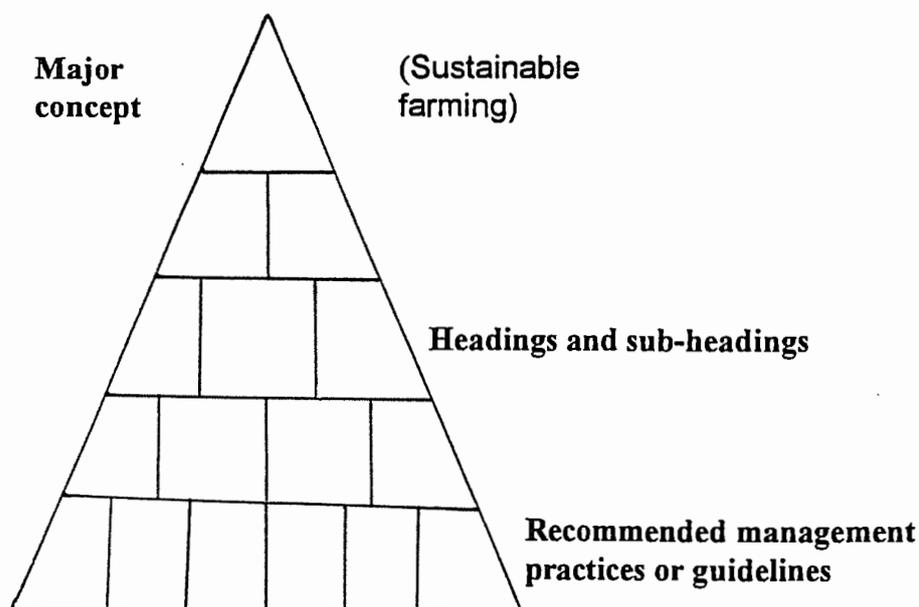
Ideas about sustainable farming will be developed today. Ideas are word pictures which are easily understood by other people and avoid technical jargon. “Dense pasture” conjures up an image, while it is harder to imagine “no weeds”.

Ideas will need to be kept simple because there are many complex issues to deal with. Each idea you think of should contain:

- a naming word e.g. **soil**
- a describing word e.g. **fertile**

This idea becomes “**fertile soil**”.

The ideas you think of will be used to make a diagram called a “concept pyramid”. Although simple and basic, it allows us to go from a complex idea to a set of practical options that make up the complex idea. The concept pyramid will be used in the workshop today to deal with all the parts of sustainable farming.



An example of how to build a concept pyramid

There are 4 or more levels in the pyramid. These levels are (explained with an example):

1. *The Title concept*

Example: A good farm bike.

2. *Major concepts -*

What makes up the title concept. Each concept contains an object (noun) and a word that describes the noun (adjective).

Example: In my good farm bike I want

3. *Minor concepts*

What makes up each major concept. Each concept contains an object (noun) and a word that describes the noun (adjective)

Example: I want a _____ in my good farm bike. To achieve that I need

4. *Sub concepts*

What makes up each minor concept. These may be the practical “how to” parts of the above level of ideas.

Sustainable
Farming

Soil

Farmers

Water

Animals

Pasture

SUSTAINABLE AGRICULTURE WORKSHOP

Facilitated by:

Heather Grey

Peter Manson

(Hawkes Bay Regional Council)

About this workshop

The objectives of this workshop are to

- inform agribusiness professionals about the proposed pastoral code of practice
- involve agribusiness professionals in the development of the proposed code of practice
- obtain ideas on what should and what should not be contained in the code of practice
- develop ways in which agribusiness can be involved in helping farmers with sustainability

Why is a pastoral code of practice needed?

To show to overseas markets, domestic customers and other interested groups that Hawkes Bay' farmers are managing their land and its resources in a sustainable way. A voluntary code written by farmers for farmers, is more likely to be used than a set of rules and regulations.

The process so far

This facilitated workshop is the fourteenth in a series held around the Hawkes Bay region over August and September. Twelve have been with farmers in local communities, with the thirteenth with agribusiness professionals and farmers in Wairoa.

The purposes of the farmer workshops were to:

- to collect as many ideas as possible about what sustainable farming could mean
- to develop a series of practical management practices (or what farmers are currently doing on their farms) that help them be more sustainable.

The practical management practices will form guidelines, which will be included in the pastoral code of practice. Practical management practices were discussed for a range of resources, such as soil, water, plants/vegetation, plants, farmers and money. One example given in a number of workshops, was regular soil testing and fertilising based on the results of the soil test. Matching fertiliser to soil needs would lead to less fertiliser wastage and reduce run-off to downstream users.

Why should the agribusiness sector be involved in developing a code of practice?

1. The agri-business sector supports farmers and farmers support the agribusiness sector. All are interlocked parts of the sustainable agriculture industry.
2. For farmers to develop and use a voluntary code to look after the land, they need support from all in the sustainable agriculture industry.
3. For the code to be effective, agribusiness must support the principles and adopt if appropriate (principles being voluntary by farmers for farmers to improve the land for future generations)
4. It is up to all individuals and organisations involved in the sustainable agriculture industry to voluntarily decide that they want to look after the land and resources for future generations

What are the advantages or benefits to you personally, to your organisation and to Hawkes Bay from sustainable farming?

- Advantages to me personally

- Advantages to my organisation

- Advantages to Hawkes Bay or New Zealand

- Who are all the 'players' involved in the sustainable agriculture industry?

Questions for later discussion:

How does my organisation fit in to this industry?

What role do I or my organisation play in the sustainable agriculture industry?

Subgroups:

A pastoral code of practice is a voluntary document, but it must have some structure, i.e. what should be written down and how?

1. What are the important things to have in the code of practice? What should be included in the code of practice?
Include specific examples if you can.
2. What should not be included in a pastoral code of practice?
Include specific examples if you can.
3. What are some practical ways you or your organisation can be involved in helping farmers become more sustainable (or stay farming in a sustainable manner)?
What are some practical ways you or your organisation can support farmers who adopt the code of practice?

Appendix 3: Practical management practices identified by the farmer participants.

APPENDIX 3.1: MANAGEMENT PRACTICES FOR PRODUCTIVE SOIL

Match land use to soil type and climatic condition. Recognise and separate different areas (by fencing)

Match stock type to contour.

Use good cropping practices and good management practices.

Use sensible crop rotations.

Use appropriate cultivation techniques for soil types and degree of exposure, e.g. contour cultivation and chemical ploughing.

Plan earthworks and consider the long term stability of earthworks structures.

Re-grass earthworks on completion.

Consider effects of earthworks on water systems.

Liaison with regional authorities, seek expert advice for earthworks.

Voluntarily retire whole or part of paddocks (e.g. unstable land).

Undertake erosion control.

Plant trees strategically - shelter belts

- pole planting (e.g. gully planting, space planting)

- afforest vulnerable parts of the farm

- retain bush/trees around springs

Maintain soil and land structure.

Undertake weed control and pest control.

Pasture management.

Maintain pasture cover on risk areas.

Use appropriate grass species.

Establish sound pasture.

Monitor soil quality.

Soil test. Apply fertiliser as per soil test, check feasibility and animal health.

Plan fertilizer programme.

Use 'free' fertiliser (e.g. from legumes).

Reduce chemical use (for organic management).

Maintain mineral balance/ trace elements in soil. Ensure adequate nutrient balance.

Watch heavy metals in fertilisers, e.g. Cadmium, Uranium.

To avoid transport problems, don't overuse nitrates and plant trees (to stop nitrates in ground water)

For good free drainage: machinery (for soil aeration, and improved soil)

contour drainage (for water removal)

correct soil pH for earthworms and micro flora

Worm seeding, and maintain fat earth worms (for organic management)

Maintain soil humus.

Ripping (for improved soil).

Improve drainage (usable area).

Control surface water.

Livestock management. Consider fencing for stock flow.

APPENDIX 3.2: MANAGEMENT PRACTICES FOR WATER QUALITY

Beware of farming practices that decrease water quality.
Restrict upstream activity.
Ongoing farmer education.

Use deep wells
Control the use of waterways - limit animal effluent run-off
Manage overflow of oxidation ponds
Septic tank overflows

To prevent acidity: good pasture control - no fertiliser run-off.
 optimum fertiliser use.
 take care that no aerial fertilizer dropped into dams.

Don't apply excessive nitrates.
Control runoff - nitrates, phosphates, residues.
Time chemical applications.
Reduce chemical use wherever possible.
Spot spray instead of blanket spraying.
Use environmentally friendly and user friendly sprays.
Proper chemical disposal (surplus chemicals).

Wise cultivation of hill country above dams: no tillage
 cultivate in contours
 use subsoil seeding machines
 direct drill

Prevent overstocking above dams: don't run cattle in steeper paddocks
 control feedlots
Limit stock access to dams. Fence off dams. Pipe to troughs. Use pumps if necessary
Manage aquatic weeds and fish in dams.

Control pests (e.g. geese). Call up Regional Council or do own pest control

No dead possums, rabbits, animals and rubbish. Find somewhere to put rubbish and dead animals.
Eliminate seepage from rubbish tips, e.g. site selection, containment method.
Use approved effluent disposal, e.g. site selection, containment method.
Filter run-off and leachates, e.g. fenced and planted water courses and dams.

Fit chlorinator to house water.
Treat water where necessary, e.g. use filters, chlorine, UV.
Use the right reticulation materials, i.e. galvanised or plastic pipe for domestic.
Filter water. Soften water.
Use recycled water for town use.

Plant trees to act as filters. Eliminate excessive run-off, e.g. hillside and gully planting.
Undertake erosion control. Erosion control fence around dams and around waterways
Plant private riparian strips

APPENDIX 3.3: MANAGEMENT PRACTICES FOR WATER QUANTITY

Plan use and needs of water.

Conserve what water you have.

Don't waste - fix leaks, check troughs etc.

Recycle where possible - house water to gardens; plant trees/crops around septic areas/swamps.

Monitor water usage.

Monitor water table. Quantify how much water we have available (district).

Ensure sustainable use of groundwater aquifers.

Learn about the water resources, e.g. groundwater. Use the experience of others.

Use historical information on weather and runoff. Local authority - collect information statistics.

Store water, e.g. tanks, reservoirs, dams. Build storage dams and tanks, e.g. build retention dams

Control heavy rain and floods, e.g. build debris dams (flood mitigation).

Tap existing springs to dams and troughs (spring taps).

Use reticulation and irrigation.

Pumps, e.g. gravity fed, ram pumps.

Windmills.

Efficient water systems, e.g. good pipelines and fittings.

Less artificial drainage.

Plant trees, e.g. shelter belts.

in hope of encouraging rain to drought prone areas.

to maintain summer flow of streams.

to reduce excess run-off (flood mitigation).

Plant available soil water.

Prevent erosion, e.g. tree planting and pastures.

Keep dense vegetation.

Denser humus levels, therefore, limiting run-off.

Leave natural swamps etc. intact.

Don't overplant.

Shingle slip control.

APPENDIX 3.4: MANAGEMENT PRACTICES FOR APPROPRIATE PLANTS

Trees

Use a range of tree species for different situations - strategic tree planting. Plan plantings.
Undertake silviculture and good tree management practices.
Learn about trees and be aware of the value of trees.
Use biological pest control.
Use tree protection (e.g. fencing), goat control, possum control.
Selective harvesting.
Local processing (trees).

For soil conservation or shelter trees/plants:

Identify problem (e.g. soil conservation, shelter). Identify area and fence securely.
Work out costings (fencing and alternative trees).
Undertake possum/pest control.
Consider agro-forestry.

For conservation or native trees

Identify trees/plants to be preserved. Encourage natural seed distribution. Encourage biological diversity.
Work out costings to fence/weed control.
Undertake possum/pest control.

For timber trees

Select suitable for area. Advice from specialists, field days, silviculture.
Avoid monoculture.
Consider markets.
Undertake weed control.

For stock forage

Drought species, e.g. pampas, poplars, willows (for stock forage)
Fence selected areas

Wildlife plants

Identify animal species to be encouraged, e.g. ducks, bees
Plant appropriate species. Plant enough area to be effective.

Pasture

Research and development (to achieve productive grass).
Use drought species in pasture.
Appropriate paddock size.
Minimum chemical control of weeds. Use biological control whenever possible (see below).
Soil test. Develop a fertiliser programme.
Check trace elements.

Grub weeds e.g. thistles

Natural predator control of weeds. Spread nodding thistle grub; ragwort control e.g. sheep.
Chemical spray weeds.
Selective grazing (weed control)

Farmers should retain control over when to cut scrub.

Scrub cutting and track cutting should be local assessment rather than office assessment.

APPENDIX 3.5: MANAGEMENT PRACTICES TO ACHIEVE PRODUCTIVE ANIMALS

Farmer observation
Farmer time (organisation, mechanisation, accounting)
Stockmanship
Good educated labour

Facilities: woolshed, yards, dip and scales.
Good access tracks.
A good tractor.
Subdivision with electric fencing.
Stockproof fences.

Well behaved dogs.
Consider long term advantages of genetic improvement in non-volume related traits: internal parasite resistance, external parasite resistance, dag growth/resistance to flystrike, ability to withstand disease and other stress
Record animal performance.
Choices of breeds/ different breeds. Have the confidence to change breeds.
'Organic' animals

Must consider animal welfare demands, especially from our consumers
Clean and ample water. Abundant and clean troughs, springs and dams.
Adequate rainfall and warmer temperatures.
Shelter and shade from sun and wind.
Good quality pasture. Includes pasture renewal, oversowing, drainage.
New pasture species.
Use sustainable grazing systems and ensure adequate plant nutrition.
Soil analysis, fertiliser, trace elements. Maintain soil fertility.
Must consider long term effects of agricultural chemicals, e.g. dips, drenches, growth promotants, weed sprays.
Internal and external parasite free
Dip and drench stock - maintain withholding period,
read the label
faecal egg count.
Dag free animals - docking and crutching.
New drug products. User friendly drugs
Aim for stress free animals.
Humanely destroy sick stock.
Carcass disposal - bury carcasses
Control pests - shoot rabbits, possums and hares.
Erosion prevention

APPENDIX 3.6: SUGGESTIONS FOR FLEXIBLE, PROSPEROUS OR SUCCESSFUL FARMERS

Some of the suggestions are directly under the farmers control, while others are outside the control of the farmer.

Outside Farmer

Continuing education, e.g. MRDC farms

Rural services retained- roading, schooling, health services

Rural population retained

Good availability of social services

0900 number for weather information (farmer pays)

A better and accurate Met service

Consultation and participation by farmers in decision making (For self regulation)

Has support of the family

Inside Farmer

Education - learn and share knowledge; life long learning

Facilitate and educate new entrants into the industry

Keep up to date and seek information

Use historic information

Use computers, teletex and read

Go to field days, seminars, courses

Develop listening skills

Develop communication skills

Use advisors/financial consultants

Seek legal advice

Re-invest in stock, fertiliser, housing, pest and weed control, labour, rural housing

Be safety conscious

Make time for recreation

Be aware of the weather and make decisions

Have buffers against adverse climatic events

Make submissions (local and national)

Support the 'doers'

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Best practices for addressing today's
environmental concerns

June 1995

DEVELOPED BY
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FEDERATED FARMERS



Prepared by Heather Collins
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