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THE SIAYA CATCHMENT
DEMONSTRATION PROJECT

The field evaluation of problems,
attitudes and prospects for a continuation
of the programme report prepared for
The Natal Town and Regional Planning
Commission for presentation
at the Siaya Workshop, November 1985

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1. **INTRODUCTION**

Many concerned South Africans have participated in the global upsurge in environmental consciousness which occurred during the 1960's, belatedly recognising that our natural resources are both finite and fragile. Yet at this stage very few environmental programmes and projects of a preventive or rehabilitative nature can be described as being successful.

During 1980 an important environmental research, rehabilitation and demonstration project began in Natal. Here, our coastal estuaries and lagoon areas are amongst the most valuable resources in the region. Yet of the 73 documented estuary systems between the Umtamvuna river and Ponto de Oro only 20 have been categorised as being in a good environmental condition. Some 33 are in a fair condition and fully 20 are of a poor condition.¹⁾ Based on an assessment of the deteriorated state of the Siaya lagoon, near Mtunzini, the terms of reference for this Siaya Catchment Demonstration Project (SCDP) had, as an overall objective, the determination of the effectiveness of integrated catchment planning on resource management.

1.1 **PURPOSE OF THIS REPORT**

This report, prepared at the request of the Natal Town and Regional Planning Commission (NTRPC), focuses attention on the attitudes of the farmers of the Siaya catchment towards the SCDP. It has been requested for presentation to the Siaya Workshop due in November 1985, the main purpose of which is to bring together all the information on the project collected over the past five years. This is to be assessed in order to

determine what the future of the project should be, and what changes and adjustments in its present direction might be appropriate.

More specifically the objectives of this brief research project were to:

- i) determine and report on the present attitudes of individual farmers towards the SCDP,
- ii) evaluate reasons for any variations in farmer attitudes,
- iii) determine the extent to which attitudes of farmers may be amenable to change, and
- iv) from the above, provide guidelines for the farmers' potential contribution to the future of the project, which should be used to help conceptualise the nature of the project in the future.

In informal discussions with leading agencies in the programme the hope was expressed that this exercise might bring about an element of 'truth' about some of the problems in the overall project. While attitude research (particularly when undertaken in a milieu which warranted a clause in the contract allowing the researcher a rapid escape "should any circumstances jeopardise the successful completion of the survey") is always difficult to undertake and interpret, it is hoped that this modest contribution goes towards a successful workshop, and the successful continuation of an important and leading conservation programme.

1.3 BACKGROUND TO THE PROJECT

Most coastal estuaries and their catchment areas are part of the area classified by Phillips²⁾ as Bio-Climatic Group One - the coastal lowlands. Phillips describes the earlier appearances of the vegetation of this group as 'evergreen forest, bush and scrub with

glades of wooded savannah and grass; a mosaic of littoral scrub, bush and forest.' The description of vegetation occurring in 1973 notes the marked deterioration over the years, appearing 'almost wholly secondary bush, scrub, grass on fallow lands; very extensive sugar areas, moderately extensive exotic tree plantations and a few relict patches of forest conserved by the Department of Forestry.'

These changes have occurred over the same period as the rapid and increasingly sophisticated developments in the sugar growing industry. In many instances the development of new land to cane and the sophistication of techniques of production have taken place at the expense of the original vegetation.

In a set of policy proposals for Natal's estuaries, Begg notes with respect to agriculture³⁾ that: "increasing agricultural production in the coastal zone, especially of crops such as sugar cane tends to create conflict in terms of resource management. Estuarine disturbances include sedimentation, nutrient enrichment, the inflow of toxic substances, the alteration of runoff and encroachment onto flood plains and wetlands. Natural vegetation along and adjacent to the banks of a flowing river plays a major role in maintaining a relatively narrow and deep river channel which efficiently passes incoming water and sediment through the system. Radical changes in this area can occur where this vegetation is removed. These include severe bank erosion, widening of the river channel and the deposition of sediment on the unprotected floodplain. Finally, heavy dependence on the use of fertilisers and biocides is presumed to have greatly increased the diffuse pollution from agricultural activities."

- The authors argued that agriculturalists should accept:
- i) that vital habitat areas (wetlands, marshes, bogs) be identified and exempted from agricultural use,
 - ii) that croplands should be set back from all water areas to a point beyond an adequate buffer strip of natural vegetation,
 - iii) that the Soil Conservation Act No 76 of 1969 be adhered to and enforced ... particularly with respect to the cultivation of vleis, marshes, sponges and water courses, and that
 - iv) farm layouts should be planned to minimize the alteration of natural drainage patterns, etc.

1.4 **THE SIAYA CATCHMENT DEMONSTRATION PROJECT**

The SCDP encompasses two streams, the Amanzimyama and Siaya, which arise in, or transect ten sugar growing properties and a small portion of Mtunzini Town Board land. The lagoon forms in a wide belt of indigenous coastal forest, continuing through to the sand dunes abutting a public beach.

Essentially the SCDP was conceived as a means to an end: the restoration of the catchment area in order to promote the rehabilitation of the heavily silted and Phragmitis reed infested estuary and, to serve as a model and learning experience for similar projects in other degraded estuaries. In the five years since its inception the programme, involving some 12 organisations, has become a leading and important exercise, with those involved pioneering the criteria for the rehabilitation and conservation of estuaries in Natal. Four main thrusts have comprised the programme, set out in the original terms of reference,⁴⁾ vis;

- i) the preparation of a land use plan for the entire Siaya catchment, based on a sound assessment of all resources.
- ii) the implementation of this plan,
- iii) the undertaking of applied research to:
 - a) determine the physical . chemical and biological characteristics of the Siaya river and lagoon,
 - b) monitor in both the river and lagoon the climatic and biotic responses arising from implementation of the catchment plan, and
 - c) to record the results of the demonstration project.

1.5 PROGRESS

After five years of slow but steady progress on various aspects of the programme the NTRPC, the major co-ordinating body, have felt the need to take a new look at the objectives of the SCDP, the achievements and problems to date and, if necessary, to formulate new objectives. On a number of fronts the SCDP has proved difficult to co-ordinate, and while the allocation of responsibilities to research and extension committees and other participating organisations has been clearly defined and carried out, one significant area of the project appears to have become something of a stumbling block, particularly to the scientific and extension community. This involves the responses of the farming community itself to many of the recommended or required changes in techniques and methods of sugar cane production and land and water management.

The farm owners and managers have been the key people in the attempt to achieve the overall goals of the project, to date for, after all, it is the land under their ownership and control to which most of the activities of the SCDP have been directed. Caught,

essentially in a double bind of being inheritors of the earth in an era of environmental consciousness (which has reached junior schools in the neighbourhood) many aspects of the project challenge their age old privilege and indeed imperative, of reaping rewards from their efforts in developing the land, particularly in the fluctuating climatic, economic and political circumstances of the time.

2. **THE INVESTIGATION**

In an investigation of this nature, which involves canvassing a limited number of respondents, a number of possible approaches are available to the researcher.

Carefully formulated questionnaires (when completed in private) may elicit significant attitudes and insights concerning the impact of a project, particularly when undertaken by an independent organisation. However the farming community perhaps more than elsewhere, are notorious for refusing to fill in forms. The sugar growers of the Siaya catchment prove no exception having, prior to this investigation, been unsuccessfully requested to complete data forms about their conservation practices.

Furthermore, in discussions with the South African Sugar Association's extension services (whose brief in this project has been to prepare and implement the full catchment as well as the individual farm plans) it was agreed that the Centre For Applied Social Sciences (CASS) would not impinge on their area of concern - a questionnaire type survey intending to obtain individual grower's particular opinions about the usefulness and applicability of the unit farm plans.

Bearing this in mind it was felt that the most useful approach was to conduct open-ended interviews/discussions with individual growers during the course of arranged visits to their respective properties. This type of interview frequently involved joining the growers for meals or drinking sessions, allowing the author to view, enquire about and discuss most aspects of their respective farming operations.

Overall, and in conjunction with the use of documentation about the project, this approach allowed the researcher to gain valuable insights into the dynamics of a small farming community and their attitudes and responses to the Siaya Catchment Demonstration Project.

3. **THE CHANGING SIAYA SETTING**

In common with various social, economic and technical trends in agriculture both nationally and internationally the area encompassing the catchment has witnessed a number of important changes over the past four decades. Taken together these developments all reflect on the abilities of the farming community to react to, and adopt, the requirements of a concerted and multifaceted conservation programme. In this section attention is briefly drawn to some of the more important, broad issues. Subsequent sections consider the implications for the SCDP in more detail, as these issues reflect on the practical requirements of farmers in attempting to fulfill the goals of the project.

3.1 **FARM DEVELOPMENT AND CONTROL**

Since about 1945 the 1500ha. comprising the catchment area has seen a twofold increase, from five to ten, in the number of farming enterprises exploiting and developing the available land. From a hypothetical average unit size of 300ha. the present average farm size is 150ha., with a median size of 144ha.. One outcome associated with these developments has been a steady increase in the unit price of land. Another outcome has been a shift away from the historical pattern of family farm ownership towards a tendency for control and the final management of land to move into the hands of farming companies, some located at some distance from the Siaya. Presently sons of some of the original owners of large properties are under pressure to sell their controlling interests to groups with interests elsewhere.

Another outcome affecting conservation practices has been a fairly rapid expansion of available land to cultivation, often at the expense of the fertile swamp forest and marsh areas, as well as the riverine vegetation.

3.2 SUGAR CANE ECONOMICS

For growers, and the industry, the period has witnessed a well recorded series of advances and setbacks in the economics of sugar production (for examples, note the annual yearbooks of the South African Sugar Association).

Briefly, from a long period of increased quotas allocated and concomitant product price increases for growers as a result of favourable terms negotiated in international markets, as well as strong periodic support from the state to subsidise domestic prices for sugar, the industry now faces strong international competition. This has arisen partially from favourable terms granted to 'third world' producer countries, and partially from reduced demand in the developed countries, as well as from political pressures generally. At present strong government subsidisation for the international price obtained as well as support for increases in the domestic price have not been able to prevent a restructuring of arrangements for growers.

Consequently, in order to place temporary and efficient limits on national production growers have recently been allocated A pool and B pool quotas. Based on the value accruing from the sucrose content and thus quality of cut cane previously submitted to the millers, growers may send a maximum of 70 percent of

seasonal production as A pool cane (should it be a sufficiently high sucrose content) and qualify for the normal extensive reduction on the transport costs to the mill. The remaining 30 percent of cane returned qualifies as B pool cane, which effectively is the poorest portion of any grower's crop, and the transport costs accruing are structured so as to be prohibitive (unless the farmer is located less than 5km from any mill).

Thus, the obvious incentive to growers is to increase the quality of cane submitted, and to limit or stop production of thirty percent of the original crop.

Generally the more marginal fields on sandy soils and those areas difficult to exploit have been chosen as areas where effort is to be reduced, while alternative crops such as timber and cassava , or livestock are presently being tested as potentially profitable alternatives.

3.3 TECHNOLOGICAL CHANGES

Fairly considerable advances in the technologies of cane production have also occurred. From the era of mule-drawn ploughs and a rudimentary labour force drawn from Ingwavuma, the Southern Mozambique districts and adjacent 'reserves', the range of technologies and chemical applications which have been developed, as well as the organised spread of information concerning land types, land preparation and management have all contributed to impressive increases in production levels per unit area.

One result has been rapidly rising production costs (particularly with the increases in petroleum product

prices). In addition increasing pressure is being placed on growers to restructure their properties along the lines of (albeit tried and tested) scientifically developed land management criteria. The new equipment, land design criteria (strip cropping, road relocation and watershed protection) and the advanced fertiliser and chemical application systems demand greater expertise from, and co-ordination of, a previously neglected labour force. For the growers, most of whom have had no formal agricultural training, pressures to initiate new and largely unknown ventures (timber, cassava) are experienced along with the pressures of the rising expectations and capabilities of their respective labour forces. Very few growers have sent labour or staff on comprehensive training courses. The historical, almost feudal pattern of paternalistic labour relations is continually being threatened.

Together, these issues are inclined to go against the aims and objections of the SCDP. For our purposes here, growers intending to achieve measurable progress with the conservation requirements are faced with the uncomfortable prospect of having to spend money on expensive chemical applications to take out sugar cane growing in the highly productive areas alongside the two rivers and remaining swamp and forest land. The procedure involves re-educating the labour force who initially planted the lines of cane right up to the edges of streams on instructions from the farmer.

3.4 SOCIAL CHANGE

In line with some of the changes outlined above the Siaya catchment has also seen changes in the composition of the farming community.

Of the five original owner/operators in 1945 only one remains in an active farming capacity. A prime mover in the conservation programme, his interest is directed primarily at seeing the goals of the programme realised in his lifetime. One other original grower has a controlling interest in three of the properties (comprising over a third of the catchment) but this is directed from a distance (Mauritius and Durban) in the form of a company with other commercial interests. Five growers are sons of the original owner operators. Three of these men are now farming on their own account and two farm subdivisions of their fathers' original properties with the expectation that they will take control of the full operations at a later date, notwithstanding the potential negative impact of estate duties and transfer taxation. Two farmers manage properties for outside interests, and one relative newcomer, an engineer by training, has bought into the area and is about to retire leaving the property to his son, presently speculating in real estate.

Two broad social groupings could be said to comprise the Siaya community: those well established, more middle class growers for whom wealth is not seen as an end in itself, but rather as a means for continuing a relatively unruffled and independent way of life, and 'new comers' and managers who see wealth not only as a means to an end but as an important life goal!

The former grouping are more inclined to play a major role in community affairs in and around Mtunzini, being the historic carriers of a idealised 'community spirit', while 'newcomers' are more isolated socially, direct their activities in a more instrumental direction, and obtain a hard-earned status and prestige through participation in productivity related organizations and ventures in the district. Through productivity bonuses and incentives (or the costs of buying into the area) these men face additional pressures to produce at record levels.

Overall however the modernizing Siaya community has members with a diversity of interests, backgrounds, inclinations and particular skills. As examples,

A) already mentioned is a strong conservationist,
B) has businesses locally and farming ventures in neighbouring states

C) is vehemently active in the debates on controlling access to beaches,

D) is involved in the design and construction of innovative agricultural equipment and new farming systems, and

E) is a leader of a farmers study group with strong links to neighbouring districts, and so on.

Three growers are over 60 years of age, two are between 50 and 60 years, and three in their early forties, with one in his twenties.

4. FARMER RESPONSES TO THE SCDP

Over the life of the programme the SCDP has comprised a number of interrelated research and extension activities. (Progress and prospects with respect to each of these specialised inputs are the subject of summative report-backs at the November workshop).

For the growers the impact of these activities may be grouped thus :

Firstly the farm planning process, including both the integrated catchment plan and the unit farm plans have involved considerable discussion, co-operation and negotiation with the extension staff of the SASA. At times the process has become heated, and considering the diversity of backgrounds of participants, has generated a highly charged debate about the relative merits of different approaches and technical systems. Essentially the conservationists in the form of the planners, administrators and other participants have been expected to prove their points beyond any reasonable doubt.

Secondly a number of farmers have had scientific recording equipment such as electronic rain gauges or telephonically linked river flow and sediment measurement devices installed on their properties. While some of the equipment has been neglected by the responsible bodies, this has involved regular visits from professional and technical representatives of national scientific institutions and departments.

Thirdly, the project has included a number of educative seminars and group discussions for farmers as well as

sections of their labour complements. Organised tours through the catchment area by participants as well as neighbouring farmers associations have taken place, the most recent group trip being a helicopter flight arranged by the Siaya Extension committee.

Finally for the purposes of this report the conservation activities requiring the most concerted and sustained input (to a greater or lesser extent for each farmer depending on the length of each stream, and the size of original swamp forests on their respective properties) have involved:

- i) planting ecologically functional combinations of tree species alongside the stream banks in order to recreate the original indigenous vegetation, with associated silt and sediment catchment properties and potential for limiting the water flow rate, (internationally a process called 'stream doctoring!') and,
- ii) 'pulling back' sugar cane stools previously planted up to the edges of streams to a required width of 5 metres on either side using either systemic herbicides or more laboriously, PTO driven rotavators and hand labour, and then replanting perennial grasses, capable of holding back collapsing stream banks.

Together these practices are the most observable indicators of practical progress with each farmer's individual effort at conservation, with about 35 to 40 percent of total stream length planted to date. This aspect of the programme has a paid, part-time co-ordinator and a subsidised tree nursery.

4.1 INDIVIDUAL FARMER ATTITUDES

Farmer A, one of the pioneer settlers in the area and presently the driving force in the tree-planting and cut-back programme has arguably had the most directed and sustained involvement in the SCDP.

With a detailed knowledge of plant and tree species his involvement in conservation activities has extended beyond the confines of the catchment to include the running of informal education courses for KwaZulu schools, as well as for local farm labour. Occasionally he is called to advise on the state of conservation in other sugar growing areas.

With a determination bordering on obsession his commitment to the project requires little evaluation. A sprightly enthusiasm has at times led him beyond his brief as on-site project co-ordinator, occasionally raising the ire of neighbouring growers through clandestine and unauthorised tree-planting activities, thought by some to have taken place after dark (He notes there are some 50 ways to skin a cat!). His enthusiasm has been partially tempered for a number of reasons. One is the apparently unco-ordinated manner in which the various agencies have undertaken their roles, another is the limited time the various specialist 'fundi's' have spent at the project. He feels he is fighting his own battle and would have liked greater outside interest and support. Another is the persistent lack of foresight he perceives among neighbouring growers, many of whom don't share his particular brand of commitment.

Farmer B, the only resident with an agricultural degree, is now well established locally. The son of a pioneer he is active as an evaluator for the Land Bank and serves on a national Farm Labour committee. He has commercial interests locally and a ranching and sugar operation in Swaziland. A keen marksman and tennis player he and his wife are also wild-life enthusiasts. Presently experimenting with diverse drainage techniques in swamp areas, B has made some progress with conservation. However two factors mitigate against a rapid compliance with conservation requirements. Having already built a costly stabilizing bridge over the Amanzimyama stream, he is hesitant to take out a high yielding crop, planted in 1957, from the adjacent fertile land. In addition he feels the cost of using herbicides for this purpose should be subsidised, since monthly running costs for his operation are in the region of R30 000. He also feels that his effort and expense at catchment restoration just might benefit neighbours downstream in terms of greater availability of irrigation water.

B is a leader and innovating entrepreneur in the district and his attitude to the SCDP is ambivalent. With an already widespread appreciation of the merits of an independent rural lifestyle and a highly supportive wife with a keen appreciation for the indigenous vegetation and associated birdlife, he recognises the long term benefits likely to accrue to his property, both functionally and financially. Overall he would like to see the SCDP continue, realising his responsibility in a leading programme. He has no particular suggestions for a procedural framework for the continuation of the programme, besides his suggestion of subsidisation of costs of pulling back cane.

C, also the son of a leading pioneer has taken a positive role in the SCDP. A manager of a portion of his father's interests, he has developed the area of the stream source with innovative grassing techniques and tree replanting directed at recreating an indigenous forest. His interest in and knowledge of grasses and plants is extensive yet his overriding passion is a quality crop of cane. This is possibly linked to a production bonus he receives, as well as a healthy competitive spirit with other local growers. The A and B pool restrictions recently introduced have led him to consider other crops on marginal areas, and feels this restriction inhibits him from further pulling back high yielding cane from the remaining portion of the stream on his property. With an attitude similar to others he prefers to wait until the end of a high yield crop and then reshape drains and fields properly and plant the required grass protection.

C, like his wife, is active in community affairs, taking a leading role in opposition to restrictions presently being proposed over access to Zululand beaches, which would disturb a long held right to unrestricted fishing and community and family "braai's". His overall attitude to increasing restrictions on a disappearing way of life is vehemently negative, yet his pride in his role as a leading grower contributes to his positive input to the conservation exercise. He realises the sugar industry is 'looking at' the catchment and while he feels he has 'done his bit' he can still make a positive contribution, although unspecified by himself, to the conservation programme.

The major interests of D, a well established grower, are directed at developing alternative enterprises to his 'bread and butter' sugar cane operation. Having tried a livestock feed-lotting venture he is now adventurously testing cassava production (about 40ha) as a lucrative supplementary enterprise, under the watchful eye of the community. He and his resident assistant are continually designing, building and testing appropriate mechanical equipment for these ventures.

Somewhat reclusive, D's attitude to conservation is 'technical' in orientation and he disagrees with recommended strategies, feeling that the inherent qualities of the cane plant can be used to sufficient effect along stream banks and the extra effort required is not likely to reduce the extent of soil runoff to any degree. His utilitarian attitude to nature has previously led him to replace swamp forest with income yielding bananas while retaining larger trees for shade. Some progress has been made on his property however, but through misunderstandings labour have (twice) destroyed some new trees planted by the project coordinator. Overall he is keen that the 'conservation people' carry on with work on his property as long as it doesn't take too much of his time. A more sustained interest in his property would promote an expanded effort.

E, an immigrant to the country, manages two properties totalling 370ha. He possesses a sugar processing technicians diploma and began life as a field foreman in Mauritius. Over the past 18 years or so he has worked to a respected position as a leading grower, gentleman and overall leader in the district's farming affairs. Recognising that the capital structure in the

industry prohibits him from ever owning his own property, his inherent pride is directed at an extremely efficient management and recording system, and the educational progress of his children, all of whom are at university level. His detailed knowledge of the industry's affairs extends to personal contracts at cabinet level, and he leads a farmers study group with region-wide contacts.

With a technician's precision his management is immaculate, extending to planting tree and shrubs along minor farm roads. His conservation efforts to date, in all the facets of farm planning and riverine reclamation are positive and encouraging. However, subject to an external and distant accounting control he exhibits the pattern of a hesitance to comply fully with the requirements of pulling back sugar cane to the required 5 metres. In addition, his reminiscences of bush clearing in his early days as farm foreman, a task he viewed then as a 'civilising' process, getting rid of

"monkeys and wild animals to make the place safer"

tends to conflict with the contemporary notion of restoring a 'primitive' and pristine environment. Frequent allusions to his conservation achievements to date failed to flatter, when compared with considerations of the quality of his standing cane crops, and tonnages delivered to the mill.

He acknowledges the pressure put on farmers to conserve, and feels that the various agencies should

"not push the farmer too hard - if you take it slowly the results will be achieved in the long term".

His recommendations for the future of the project are for greater coordination, but again, a method was not forthcoming from him.

F, also a manager of long standing had an initial , dynamic input into the SCDP. The first grower to pull back cane and plant trees, his enthusiasm has waned for a number of reasons.

Fiercely individualistic and somewhat anti-social he argues against many of the technical requirements of the farm-planning exercise. His logic is essentially European and does not take into account the back-up services of the industry as part and parcel of his own operation, but rather sees this as an impingement on his freedom. Subject also to production incentives, conservation takes second place to rational and practical measures for each field, crop and slope. His small dam-building exercise is an excellent example of an ecologically appropriate system for both fields and swamps. Yet it confronts and confounds the more bureaucratically minded technicians intent on imposing a design system conjured out of equations and flow rate formulae.

His confrontational attitude and social isolation inhibits the optimal development of his property. Self-conceived and executed drainage designs have proved useless in peak rainfall periods since a neighbour's property does not have a matching capacity. Yet a reluctance to use formal channels to resolve the issue warranted this author's simple notification of the matter to appropriate extension staff, and the problem was taken up immediately.

Essentially it has been personal differences, taken far too seriously, over the application of conservation measures which have limited F's continued progress. In addition, building operations, as Mtunzini's housing stock increasingly edges up to farm-land, have destroyed some of his well intentioned and conceived run-off control systems. Together these have led him to focus on maximising production very effectively without any real participation in community and conservation affairs. The researcher's detailed interest however, prompted him to note that he would like to see the overall programme continue, with perhaps some input from himself in assisting other areas with advice and demonstrations of the problems he has encountered.

G, an older resident and son of a pioneer who sold off large portions of his original holding, has long since stopped bothering about conservation with any degree of seriousness. With a large portion of land on sandy soils his operation barely 'ticks over'. Having sons not particularly interested in following his footsteps, his major pre-occupation, besides bowls and a little fishing, appears to be with the ability of the state to extract estate duties and transfer taxes. This concern is probably prompted by a substantial offer (for him) from a large group with outside interests, for his land and dismal standing crop.

The prospect of a comfortable retirement and a concern for his grandchildren takes precedence over any sustained input into conservation measures of any sort. Here, his attitude has also been confrontational. Presently the low rainfall has led him to dam the main tributary of the Siaya with sand, so his crops might benefit from the resulting seepage. Where trees have

been planted their competition with the standing crop for available light and water is seen as a threat to financial returns per ha.. Overall he treats conservation types with some scorn, posturing a knowledge of the land certainly not borne out by his own achievements. He feels the SCDP should continue, if only to make "the area look good", and is willing in a jovial half-hearted fashion to follow suit with any new developments.

H bought into the area after a period in the state transport sector. With only a small part of the Amanzimya passing through his property his attitude to conservation is best likened to that of an engineer. Paradoxically he treats his remaining swamp forest with an artist's respect. This respect extends to his noteworthy achievements in developing his property as well as the quality of his crop and the standard of his internal roads.

He feels that his carefully considered drainage systems and stream-bank management have been adequately constructed in order to hold back any excess soil bearing water, and lays blame for silt build-up squarely in the hands of a neighbour.

The aforementioned respect extends to his innovative house design and magnificent gardens. With a sensibility of a former professional man reaching retirement age H feels that the SCDP has had some noteworthy achievements, particularly with regard to tree-planting, yet notes that the possibility of the lagoon never being properly 'scoured out' by the efforts undertaken upstream might nullify the programme altogether.

I is the last and youngest farmer in the catchment with responsibilities for a portion of his father's land. Located at the physical end of the stream system alongside the dense strip of coastal forest his conservation efforts do not affect the SCDP immediately. With the headstrong enthusiasm required of a young man in an older man's world I has visions, alternatively, of developing a commercial water wonderland for Transvaal tourists or a high powered irrigation system with water pumped from the weirs constructed for measuring sediment and flow rates in the SCDP.

Basically peripheral to the SCDP, I is in the shadow of his pioneer father and agrees with the overall goals and methods to date. He feels more communication between growers would go towards a better programme.

4.2 ATTITUDE GROUPINGS AND ATTITUDE VARIATIONS

From the foregoing individual attitudinal and circumstantial profiles of farmers in the Siaya, three distinct categories of farmer support and opinion may be listed. For convenience these groups may be described as:

- i) Positive responders
- ii) Ambivalent Responders and
- iii) Negative Responders.

Interpretations of reasons for these three types of responses, and the variations in the form in which the different farmers have responded are set out below.

4.2.1 POSITIVE RESPONDERS

Farmers A, C and E have played an important role to date. A has been an initiator, promotor, active educator and co-ordinator. C has led by example, having planted a stream source area to an embryonic indigenous forest. G has cautiously progressed and actively promoted the programme to neighbouring farmers associations.

The 'group' comprises members from old established families in the district as well as 'up and coming' managers. All have farming operations which, despite the current set-backs in the industry, are on exceptionally sound financial and managerial footings. These 'leaders' are thus able to expend both time and effort on other activities. As a group their social and extra-mural activities are strongly centred on family, neighbourhood and local farming affairs. All have a strong sense of social responsibility and personal accountability. In addition all three men have an affection and affinity for plants and planting, which they have turned to good advantage financially. Finally all have strong and supportive wives who identify with the projects overall goals.

Together these reasons promote their effective participation in the SCDP, notwithstanding the respective limitations set out in 4.1.

4.2.2 AMBIVALENT RESPONDERS

Farmers B, D, F and I have all made reasonable progress with their respective conservation activities. None, however, has progressed beyond an initial effort and as a group they have each withdrawn from active

promotion and involvement in the programme. The reasons for this are diverse but may be summarised as a combination of the following;

- a) an active participation in other (for them) more important or more rewarding activities on their properties;
- b) a reticence and hesitance due to social and personal differences, albeit of minor importance, with neighbours and the various conservation and planning agencies (a trend prevalent in all farming communities which in many senses, live on each others doorsteps);
- c) a related individuality and eccentricity which tends to reinforce differences rather than similarities and common goals and
- d) more technically, the active decisions taken by these growers not to pull back cane and plant the required trees and grass until the last ratoon of a standing crop. Obviously this is prompted by both financial and practical considerations, the usual reason given being that the respective fields can only at that stage be properly levelled, drained and planted in accordance with the best interests of both production and conservation.

The 'group', again, comprises men of older families as well as newcomers. Two are socially isolated by choice and prefer to concentrate their efforts on directly production-related initiatives with more short term rewards than those which an ongoing investment in conservation might provide. The third has diverse interests elsewhere which he feels stretches his budget sufficiently to preclude any further investment in conservation and the fourth, with changing aspirations and

ideals, sometimes radically in conflict with the conservation lobby is in that difficult, planning stage of a farming career where a number of alternative ventures for his future all seem possible.

4.2.3 NEGATIVE RESPONDERS

Farmers G and H have , for widely differing reasons, strongly negative attitudes to the project.

H, whose farming practices are in many instances a direct and deliberate contradiction of the requirements of the programme, seems prompted in this regard by the necessity to prevent further crop failures. This in turn stems from an apparent neglect of many of the basic principles of farm management. The aforementioned prospect (4.1) of a substantial offer for his land would appear to promote an attitude whereby the problem is seen to be likely to become someone else's. G , however, is inclined to take an intelligent, detached and clinical view of the conservation issue, arguing firstly, that many of the measures in the programme are unnecessary and secondly, that should they in any event be successful, the combined end effect of any reductions in sediment deposition and an increased flow rate in the streams would not restore the lagoon to its original condition. Any expense occurred by himself in the exercise would therefore be a waste.

Explanations for these respective attitudes must be couched in terms of the circumstances of the two growers.

Both nearing retirement, F has neither a formal education nor supportive heirs, and after a long period of relatively difficult circumstances, the prospect of a comfortable change away from day to day problems warrants his presently neglectful and negative approach. G, on the other hand, has a like-minded son intending to continue his example of immaculate technical management with its obvious rewards in terms of occasional trips abroad and absolute independence.

5. ATTITUDE CHANGES TOWARDS THE SCDP

The prospect of any change in these 'sets' of attitudes towards the SCDP is in itself a subject for considerable debate. Internationally the literature on attitudes is ambivalent with respect to both methods and prospects for changing deep-seated attitudes towards any number of issues.⁵⁾

For our purposes the evidence suggests that attitudes to the SCDP from farmers in the Siaya catchment are closely related to the respective interests and circumstances of individual growers. It follows thus that change in these circumstances and interests are likely to lead to changes in attitudes, either negatively or positively, towards the project. However, while overall circumstances in any agricultural industry may change fairly rapidly due to; i) seasonal climatic variations and thus yields and ii) the normal market variations (supply and demand, pricing policies, international changes and so on), for the individual farmer the effects are usually realised slowly and incrementally. Essentially farmers are 'lumped with what they have got', and the successful and optimum development of that enterprise or combination of enterprises takes at least one generation. In addition a change in farm ownership, either through sale or succession, usually only occurs at the end of one generation or life-span: thus the possibility of newcomers with differences in attitudes and approaches coming into an area is infrequent.

In the Siaya catchment the prospects of both increased wealth leading to farmers and managers developing the aptitude, time and inclination for conservation, as

well as changes due to newcomers entering the district due to 'generational change' are positive.

However, of itself, these likely trends will not promote the effective continuation of the project. The scale and timespan of events is too long. A much more immediate and likely force which has the potential to persuade a greater and sustained commitment from growers is that of public opinion. Increasingly, throughout the sugar-belt a conservation consciousness and ethic has been developing. This has recently extended to other individual growers as well as to the larger, group interests. The recommendation here is that effective use be made of public opinion and interest, in conservation, and more specifically, use of the growing dynamic which farmer interest in conservation carries within itself.

5. GUIDELINES AND RECOMMENDATIONS

This report has focussed attention on one aspect of the Siaya Catchment Demonstration Project: the combination of circumstances, events and issues contributing to different sets of attitudes towards the project from the farmers and managers themselves. At this stage of the project's life the evidence suggests that the SCDP has had a limited but nevertheless positive impact in terms of growers' responses to the goals of the programme. Taking two indicators as examples of this progress, the approximately thirty-five per cent of the stream systems already planted and grassed, and the three positive farmer responses, stand out.

The future of the programme certainly appears to hinge on farmer involvement. Apart from the obvious need for the scientific community to clarify more precisely the observable changes in the estuary and stream system and for progress with the farm planning exercise to continue, the project requires an organised commitment from growers both individually and as a group.

The following recommendations are directed at generating such an involvement:

Firstly the present structure of the Siaya Catchment extension committee, comprising representatives of the S.A.S.A. Extension Services and the Siaya growers, requires an expansion to promote more control and thus responsibility on behalf of the growers themselves for the SCDP itself.

A recommended format for this involvement is the formation, at the instigation of both the S.A.S.A. extension services and the Oceanographic Research

Institute, or the NTRPC, of a separate Siaya Catchment Project Conservation Committee. Chairmanship should revolve, either bi-annually or annually, among the eight growers, with meetings, (occasioned by a braai), demonstrations and tours of progress made by each farmer occurring bi-annually. Chairmanship should initially be offered to any of the three men identified as leaders in the projects to date and then passed to other growers, either alphabetically or on a names-in-a-hat basis.

Secondly this committee should jointly have the responsibility of dealing with outside interested parties. Contact with other growers would be passed to this committee , thus promoting both an effective spread of ideas, problems and information , as well as a resultant strong sense of responsibility for one's own backyard. Nobody likes to be 'shown up' by his contemporaries or peers, particularly over issues which have an ethical component. It is thus only by placing the growers themselves in a highly visible position vis-a-vis other growers in the industry with an interest in methods, techniques and benefits of conservation that a continued and sustained commitment to the project will be ensured.

A third component of these recommendations is for the establishment of a highly visible method of recording each farmer's progress with respect to tree-planting and "pulling back" cane. This would require the setting out of a benchmark (the part of 100 per cent of the total combined stream length planted and pulled back, on each property) as well as the use of a large diagram or scale-model where annual progress can be marked off for all to see. A suggested site for this facility is the Mtunzini Town Board Offices. Together

with a board explaining the aims and goals of the SCDP, and its impact on the area's natural heritage, these measures should go towards an effective and sustainable future for the programme.

Finally the costs for the committee expenses and the proposed facilities could be carried by the NTRPC, a proposal which would certainly be less expensive than subsidising farmers for the costs of herbicides or labour incurred in pulling back cane, as a number of growers have suggested.

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FOOTNOTES:

1. Begg, G., The Estuaries of Natal, Natal Town & Regional Planning Report Vol 41, 1978.
2. Phillips, J., The Agricultural and Related Development of the Tugela Basin and its Influent Surrounds.
Natal Town and Regional Planning Report Vol 19, 1973.
3. Begg, G., *ibid.*
4. Revised terms of Reference for Siaya Catchment Demonstration Project - NTRPC Note: Ref C41.9.1.
5. For examples see:
 - 1) Brown, J.A.C., Technique of Persuasion Pelican 1979.
 - 2) Warren, N & Jahoba, M., Attitudes: Penguin 1973.

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