A CURRICULUM REVIEW OF THE FARM MANAGEMENT COURSE AT HIGHLANDS AGRICULTURAL COLLEGE PAPUA NEW GUINEA

BY

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Papua New Guinea P.N.G. is an Agricultural Country with over 85% of the population dependent on subsistence Agriculture for their livelihood. The country derives some 40% of its foreign earnings from Agriculture. Increased agriculture production could not be achieved without input from Agricultural Education and Training. The PNG Government established an Agricultural Education and Training Branch in the early 1960's and successfully maintained this until the mid-eighties when monitoring of curriculum development and evaluation was hampered by poor economic conditions.

The purpose of this study was to determine whether the curriculum content and, in particular the farm management component of the current Highland Agricultural College (HAC) Post Certificate Diploma (PCD) programme contained suitable and adequate management knowledge and skills training to meet the vocational needs of Rural Development Officers (RDO)

To determine these a curricula comparison was made of the farm management curricula from selection of Commonwealth Agricultural Colleges and a survey questionnaire was used to seek responses from graduates of the current PCD training programme together with a small number of certificate graduates.
From these studies two areas of training were identified:

1.That an advanced report writing course was needed to provide the knowledge and skills required by RDOs.

2.That an expanded current Feasibility Studies course in the PCD would be necessary to improve the management horizon of individual graduates and to overcome some management weakness experienced by aspiring RDTs.

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ABBREVIATIONS:

AE&TB- Agricultural Education and Training Branch.

ARDO- Acting Rural Development Officers.

ADRDO- Acting District Rural Development Officer

CSU- Charles Sturt University

DAL- Department of Agriculture and Livestock

HAC- Highlands Agricultural College

FCA- Fiji College of Agriculture

LU- Lincoln University

NDAL- National Department of Agriculture and Livestock

PAD- Post Certificate Diploma

OAC- Orange Agricultural College

PDAL- Provincial Department of Agriculture and Livestock

RDA- Rural Development Assistant

RDT- Rural development Technician

RDO- Rural Development Officer

SO-Scientific Officer

USP- University of South Pacific.

CHAPTER 1: INTRODUCTION.

SECTION 1: INTRODUCTION

1.1 Introduction to P.N.G.

Papua New Guinea lies broadly between 0 and 15 degrees South of the equator and between 141 and 157 degrees East longitudes. The country has an area of around 457,000 square kilometres, consisting of a large mainland area and some 300 islands. The country boarders Irian Jaya (Indonesia) to the West, Queensland Australia to the South and the Solomon Islands to the Southeast. The topography of the lowlands is flat to undulated hills. The inner part of the country is very mountainous and rugged, peaking to 4,400 meters. The steep terrain makes it difficult to link all provincial centres on the mainland by road. The main mountain ranges are the Kubor and the Bismark ranges. In between these mountain ranges are numerous valleys and gullies. The Waghi valley is one of these and is well known because of it intense agricultural activities. The Highlands Agricultural College is located at the head of the Whagi valley.

1.2 Climatic Condition.

The climate of the country varies remarkably between areas. The lowlands of the country experience a typical tropical climate with daily temperatures varying from 21- 35 degrees celsius, while the highlands have a cooler climate with daily temperatures varying from 13- 24 degrees celsius at around 1800 metres above sea level. Because of the cooler climate, the highlands favour agricultural activity and many varieties of crops are grown, including introduced temperate crops such as vegetables.

There are two main seasons- the wet and the dry season, and the highlands sometimes experience frost during a long dry spell. The wet season begins about November and ends about April and is influenced by the North West Monsoon, with the peak of the rainfall occurring between Christmas and the New Year. The dry season occurs between June and September.

1.3 HAC Climate.

The Highlands Agricultural College (HAC) is located in the centre of the country which allows relatively easy access to and from most provincial centres in the country. The home province of the college is the Western Highlands Province with its headquarters at Mount Hagen. The town of Mt. Hagen is about 1700m above sea level. The average rainfall of the province varies from 2000mm-3500mm annually. The population of the province is about 450,000 people and of that about 25,000 live in the town of Mt. Hagen itself.

1.4 Demography

The population of Papua New Guinea is estimated to be 3.7 million and it is growing at the rate of 2.5% per annum. The bulk of that population, about 80%, live in the rural areas of the country, while 20% of the population live in urban areas. Papua New Guinea is a country with 700 separate cultural and linguistic groups. English is the main language used for instruction at schools and business communication in Government and private organisations. Apart from English, the two lingua frana (Malanisan Pidgin and Hiri Motu) are also commonly used.

1.5 National Government Development Policies.

Like many developing countries, limited resource constrain adequate development in Papua New Guinea. To ease pressures and avoid wastage, a national framework of guidelines was necessary to provide a sense of direction and to enable an effective resource allocation. The Papua New Guinea Government has developed, in the authors opinion, good general policy guidelines. To include them all would require a book length treatment and is beyond the scope of this study. However, it will be necessary to examine specific Departmental (National Department of Agriculture and Livestock) development strategies directly relevant to this study.

The National Development Policies for the Agricultural Sector as contained in the National Policy Directives are as follows;

1. The Government will increase the allocation of available resources

to agriculture. They will be used especially for human resource development and to improve the capacity and competence of the Department of Agriculture and Livestock and the provincial divisions of primary industry. It will also ensure that appropriate support services to farmers are effective.

2. The Government, in order to maximise the impact of its efforts in rural areas will ensure that there is a coordination of all national and provincial agencies' programs.

3. The Government will make every endeavour to provide a climate conducive to private investment in development of the agriculture and livestock sectors.

4. The Government recognises the need for increased selfsufficency in food production.

5. The Government is aware of the social and environmental problems created by economic development and will pay special attention to alleviating or avoiding them in present and future agricultural programs.

1.6 National Departmental Development Strategies.

The Government realising the importance of Agricultural Development for Papua New Guinea, has developed a set of National Agricultural Development Strategies. The Department of Agriculture and Livestock has among others the following objectives for the years 1990-1994 (D.A.L.,1990):

1.6.1 To expand and improve the production of food crops and livestock in order to assist in meeting local nutritional requirements as well as ensuring household food security.

1.6.2. To ensure that people in the less developed areas have the opportunity to participate in the cash economy;

1.6.3. To improve the opportunities for self-employment among the rural population in order to minimise the urban migration problem;

1.6.4. To ensure that agriculture sector has a broader and stronger production base ;

1.6.5 To support the extension and diversification of export and import replacement commodities;

1.6.5. To encourage the private commercial sector to play a greater role in agricultural development.

1.6.6. To ensure the highest possible standards of agricultural research,plant and animal health and quality of produce is maintained.

1.6.7.To ensure human resources of the agricultural sector are adequately developed to meet the manpower needs of the sector.

1.6.8. To ensure that agricultural production is accelerated with minimum adverse effects on the environment.

SECTION 2 : AGRICULTURAL BACKGROUND.

2.1 Introduction.

Papua New Guinea is largely an agricultural country and agriculture is the most important activity in the economy. Agriculture provides livelihood for about 85% (D.A.L., 1990) of the economically active population of Papua New Guinea. It also provides about 25% (D.A.L.,1990) of employment in the formal sector of the economy and contributes about 40% to the total value of exports. Although the contribution from the mining industry to the economy is currently higher than that from the agricultural sector, this is unlikely to continue in future years. Agriculture will play a dominant role in the lives of the majority of Papua New Guineans and the country's economy for many decades to come. Since agriculture is such an important activity, the transfer of advanced information and technology to subsistence agriculture will require agricultural education and training to form an important integral part of the agricultural development process.

2.2 An Overview of PNG Agriculture.

Agriculture in Papua New Guinea is characterised by three sectors; the subsistence sector ,the semi-subsistence sector and the commercial sector. The semi-subsistence sector dominates most of the agricultural activities, because the majority of PNG's population fall into this category.

2.2.1 Subsistence sector

The pure subsistence sector accounts for about 10-15% of the total agricultural activities in PNG. This sector's production is purely for household consumption. In other words, whatever is produced is consumed by the family.

2.2.2 Semi-subsistence sector.

The dominant feature in the semi-subsistence sector is characterised by cash crop production for the cash economy. Although all farmers in PNG are to some extent subsistence farmers, the sector is distinguished by part of the

agricultural activities of farmers being for cash reward. While each semi-subsistence farmer's production can not contribute significantly towards the national economy on its own, the total contribution from all the farmers aggregate to have a significant impact. This sector alone represents about 80%(D.A.L.,1990) of the total agricultural activity and accounts for more than 50% (D.A.L.,1990) of the total agricultural exports.

2.2.3 Commercial sector

The commercial sector is characterised by high cost capital inputs. Commercial units are usually owned and operated by either multi-national corporations or wealthy national businessman. Although, they are highly commercialised in nature, their production only represents about 8% (D.A.L.,1990) of the total agricultural activities. Most of commercial sector's product is exported and represents about 30% of the total value of agricultural exports.

2.3 Agricultural Production.

2.3.1 Food Crop Production.

Food crop production is the most important agricultural activity in the PNG economy today. It involves about 80-85% (D.A.L.,1990) of the economically active population in both sectors. Essential food production provides the foundation for a stable and sound social and economic growth of the country.

2.3.2 Export Crops.

The country major export crops are; coffee, cocoa, copra and palm oil. Together they account for about 80% (D.A.L.,1990) of PNG agricultural export earnings. The minor crops include tea, sugar, rubber, poultry and other livestock products. The semi-subsistence sector produces about 70% (D.A.L.,1990) and the commercial sector produces about 30% of the total agricultural exports.

2.3.2.1 Coffee

Coffee is the most important crop which earns over 50% of the total export value. Unfortunately, coffee can only be grown at the higher altitudes and so it is only grown in the highlands. The semi-subsistence sector produces about 70%(D.A.L.,1990) while the commercial sector produces about 30% of the total volume of coffee.

2.3.2.2 Cocoa

Cocoa is the next most important export crop and accounts for about 22% of the total value of agricultural exports. Again the semi-subsistence sector produces about 70% and the commercial sector produces about 30% of the total volume of cocoa for export. Cocoa is mainly grown on the lowlands.

2.3.2.3 Palm Oil

Palm oil and palm kernel are the next most important export crops which account for about 14% of the total exports. Rural settlements supported by the nucleus estates are responsible for the 48%(D.A.L.,1990) of the total production, while 52% comes from the commercial nucleus estates.

2.3.2.4 Others.

The minor crops may not contribute significantly to export earnings, but they play a vital role in import substitution e.g., sugar and poultry products.

SECTION 3: EXTENSION AND MANPOWER

3.1 Introduction.

The term 'Extension' was first used at Cambridge University about 150 years ago (Adams,1982). The University extended education to factory workers who otherwise had no chance of formal education. However, agricultural extension, in its present form was introduced in the United State in the early twentieth century,(Barter ,1982). In both cases the effort was concentrated on developing either the public's or the farmer's knowledge and skills. Agricultural extension is primarily concerned with educating and training farmers with the aim of increasing agricultural production. The extension methods employed in developed countries seem to be effective and intended results are often achieved in a relatively short time. On the other hand, the same methods employed in a developing country often present many contrasting problems.

3.2 Extension in P.N.G.

The major emphases of agricultural extension efforts during the colonial era were directed at increasing export production (cash crops). Very little attention was given to food production. A major change of emphasis occurred after independence and increased food production was given top priority. This was because of the increasing amounts food required by the rapidly growing population and to reduce import dependency. The rapidly growing population exerted non productive pressures on the available land greatly reducing food production capacity. In such areas the Government had two choices; either, to resettle some of the people elsewhere, where land was available or encourage the use of modern technology to enhance increased production to sustain the rapidly growing population. Agricultural extension became a very important issue when means of increasing food production by adapting new technology became the preferred option. To impart the 'know how' of these technological innovations to ordinary villagers is a very difficult process. Agricultural education and training becomes an important bridge between a villager and technological innovation and requires highly trained extension workers to impart.

3.3 Structure of Extension

It is perhaps true to say that there is no one structure universally valid to all countries. Many developing countries find it appropriate to adopt "rural extension", which is termed by Adams,(1982) as 'flat or organic.' This approach is characterised by an instructional role and definition (Adams,1982). Communication is horizontal and consultation is common rather than direction from the top down. This is the most widely adopted method in P.N.G. However, as has been mentioned earlier, during the colonial era the extension effort was top down and mainly directed at cash oriented crops and livestock. This structure is defined by Adams,(1982) as 'tall or mechanistic.' This structure is characterised by graded tasks, direction is from the top down and subordinates are expected to carry out orders 'to the letter'. Extension efforts were directed at isolated farmers and plantation owners, while the bulk of the population remained unreached at subsistence level.

Adopting a flat or organic type of organisational structure may show a clear pecking order, however the responsibilities are sometimes vaguely defined. What is important from a training perspective are well defined and graded performance tasks for each functional level so that these can be related to training needs.

3.4 DAL Organisational Structure.

The introduction of Provincial Governments in the last decade has effectively divided the organisational structure of the Department of Agricultural and Livestock (DAL) into two separate organisations, the National Department of Agriculture and Livestock (NDAL) and the Provincial Departments of Agriculture and Livestock (PDAL).

3.4.1 National Department of Agriculture & Livestock.

The NDAL controls the activities that are of national importance while the mundane duty of carrying out the extension services at the provincial level is controlled by the Provincial Departments of Agriculture and Livestock (PDAL). Some of the major responsibilities of NDAL are;

-Policies and strategies for agricultural development.

-Agricultural investment projects.

-National food selfsufficiency programs.

-Research

-Agricultural Education and Training.

Three of these responsibilities can be operated quite comfortably within national jurisdiction while the other two important responsibilities (agricultural investment projects & national food selfsufficency programs) would require cooperative efforts from Provincial Departments to achieve expected results. The NDAL oversees and controls the expenditure of such projects but the extension and the execution of the project activities are controlled by the PDALs. At a provincial level there maybe only one national appointee overseeing the progress of such projects. However, he may not be involved in the daily decision making of the project's activities.

The training function is controlled and operated by the NDAL, e.g at HAC. The PDALs use their own resources to train their own men at institutions operated by the NDAL, except for overseas training. All overseas training is controlled and coordinated by the NDAL.

3.4.2 Provincial Departments of Agriculture & Livestock

The Provincial Departments of Agriculture and Livestock are completely detached from the adminisrative jurisdiction of the National Department of Agriculture and Livestock. PDALs are now autonomous and are directly responsible to the Provincial Government for the control and execution of extension services at the provincial level.

Development projects identified by Provincial Departments have to be approved by the National Department, otherwise most PDAL's expenditure goes through the Provincial Governments.

Figure 3.1a

GENERAL PROVINCIAL ORGANISATIONAL STRUCTURE.

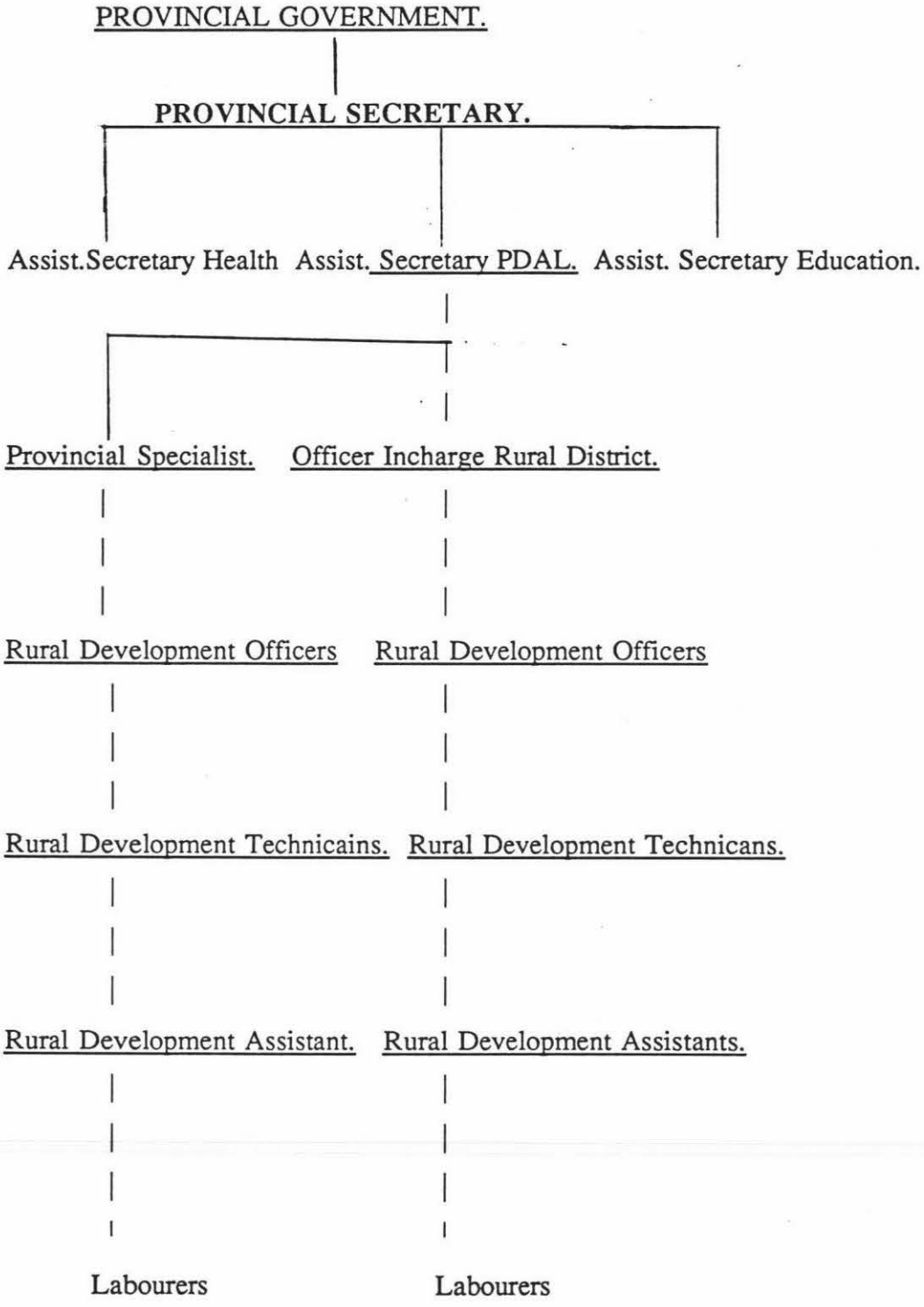


Figure 3.2b

NATIONAL DEPARTMENT OF AGRICULTURE AND LIVESTOCK.

ORGANISATIONAL STRUCTURE

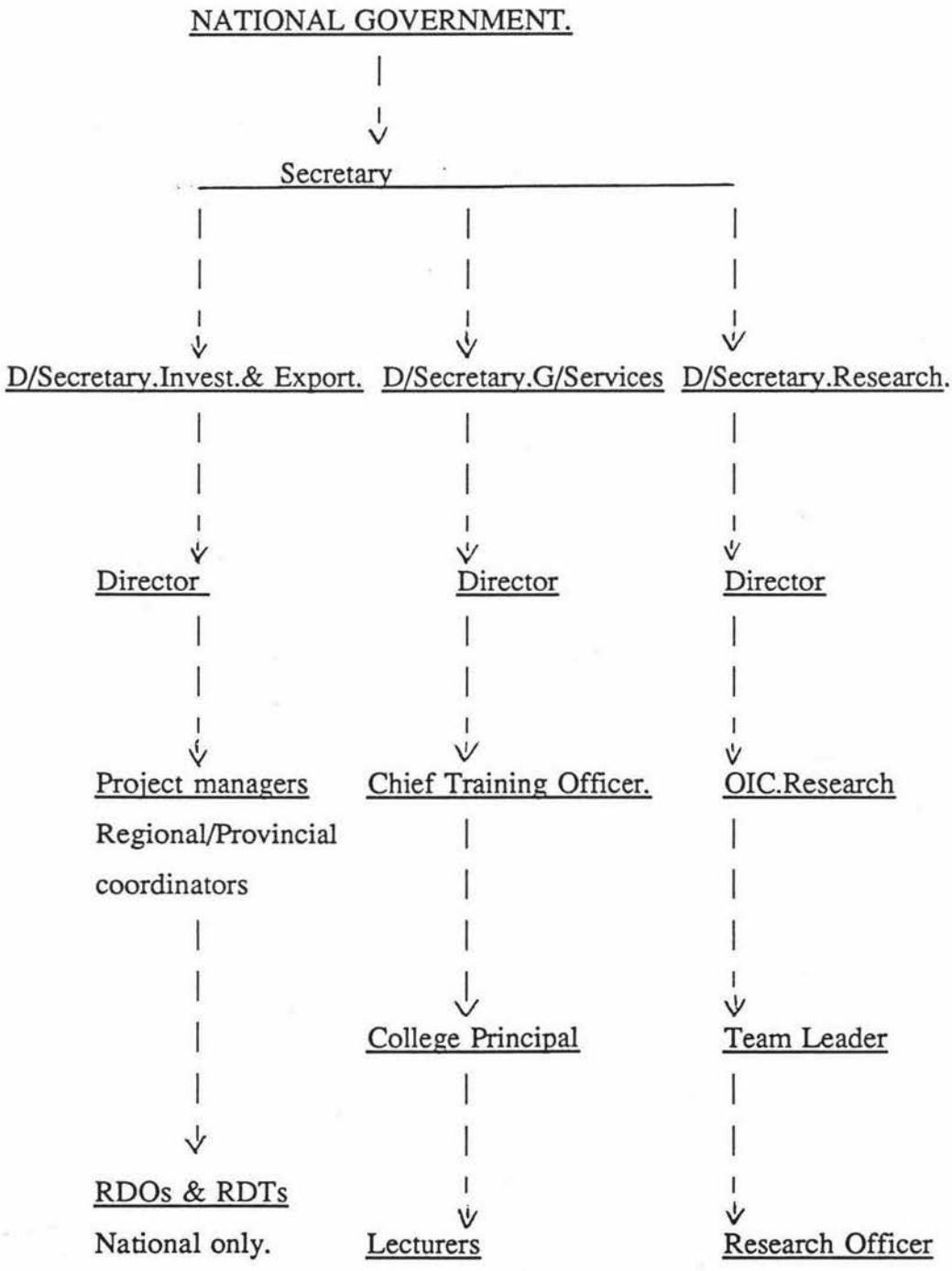


Figure 3.3c

POSITION & QUALIFICATION in the ORGANISATIONAL STRUCTURE.

POSITION.	QUALIFICATION.	STATUS IN ORGANISATION.
R.D.A.	School leavers.	Specialist by experience only.
R.D.T.	Certificate Gr.	General extension village demons. direct contact man. Res.assistant
R.D.O.	Diploma graduate	Provincial specialist, general extension, plot trails and adminstration at district or provincal level. Research Officer.
S.O.	University Gr.	Research officer Administrator, Specialist

Brief explanation of classification used above.

A Rural Development Assistant (RDA) is a person with no specific qualification and dependent on his experience gained either by doing labouring work or when supervised by an RDT or an RDO. They maybe high school graduates or primary school leavers.

A Rural Development Technician (RDT) is a person with certificate qualification in tropical agricultural (2 year training) They are mostly employed as extension workers to provide needed advice to the farmers. Within the RDT classification they have the opportunity to be promoted to more senior positions but the system denies them promotional opportunities to become or hold an RDO classified position without further appropriate training.

A Rural Development Officer (RDO) is a person with diploma qualification. The diploma qualification is either obtained through a three year diploma course or a post certificate diploma course such as the one offered at HAC. This latter is a bridging course for certificate graduate (RDTs) to give them an equivalent qualification to a diploma. They maybe involved initially as extension workers along with the RDTs in order to gain experience. However, they may progress to more senior posts and they may become responsible for groups of RDTs or oversee a number of demonstration plots. The system allows them to progress to administrative positions at district or provincial level.

A Scientific Officer (SO) is an officer with a university degree qualification. They generally take up research duties at various research centres. Those who do enter the extension service follow a similar pattern to that discribed for RDOs, but they may progress more rapidly when compared to their RDO counter parts. They may quite rapidly become responsible for trial plots, specialist duties or administration at the provincial or district level.

3.4 Role of Certificate Graduates.

The organisational structure and job classification within a Provincial Department of Agriculture and Livestock (PDAL) indicates that Rural Development Technicians (RDT) are normally holders of Certificate of Tropical Agriculture. They are primarily employed as extension workers and expected to be in constant contact with farmers. They, along with Rural Development Assistants (RDA) conduct farmer training, establish trial plots, distribute improved varieties of seeds and conduct field visits.

This explicitly indicates that training for a certificate should be directed at a basic training in crop and livestock husbandary. Also a good proportion of training time and effort should be devoted to extension methodology and communication skills in the language commonly used to communicate with the

villagers, together with some sociology to equip them with a better perspective of peoples' behaviour. The last point is often overlooked with assumption that students should understand socialy and culturaly influenced behaviours because these maybe similar to their own. However the author's opinion is that educated people have more difficulties in understanding their own social and cultural aspects than do most people in the villages. This lack of understanding is often identified as the cause of failure with the introduction and adoption of an innovation.

3.5 Role of Diploma Graduates.

Diploma graduates are trained to perform the duties of Rural Development Officers (RDO) and at a higher level than RDTs. Those duties may include providing specialist advice, taking charge of groups of experimental plots, some administrative roles and so on. It is necessary for new diplomates to gain grass roots experience so all new diplomates would have spent at least a year in their initial period with the extension service, doing most of the jobs that all RDTs are expected to do.

Ideally, for RDTs aspiring to become RDOs the extra year of training beyond their certificate should be devoted to the following areas: management, research, rural sociology and specialist areas of interest (crops or livestock-either option to be chosen by student). This approach may be ideal for both the three year diploma training and the one year post certificate diploma, with minor alteration for PCD because of acquired field experience. The expectations and aspirations of Post Certificate Diplomates would be quite different from that of a recently completed three year diploma graduates. The PCD graduates would probably expect to move rapidly into more senior management roles at a district level or become a specialist advisor immediately or a short time after graduation. They would probably be the right person to conduct and plan development projects for a district as District Rural Development Officer (DRDO) or as a senior specialist. Having this in mind, the emphasis of the PCD training should be placed on management, research, rural sociology and a technical subject, either crops and livestock.

3.6 Role of University Graduates

The usual role of university graduates is to be fully involved in research. However those who do enter the general extension service often find themselves initially competing with diplomates. It is important in general extension that everyone gets good practical experience and so the initial part of any graduate's employment is confined to general extension duties. However, unlike certificate and diploma graduates, most university graduates can expect their promotional advancement to be more rapid. They may often move quickly into a senior management position.

SECTION 4 : PNG AGRICULTURAL EDUCATION AND TRAINING.

4.1 Introduction.

Agricultural Colleges were established in the early 1960s by the National Department of Agriculture and Livestock because the Government realised that without agricultural education and training agricultural development could not progress at the desired pace.

The Agricultural Colleges under the auspices of Agricultural Education and Training Branch (AETB), has trained many of the present administrators and senior public servants in both NDAL and PDALs. Training policies ,directives and curricula have changed over the years as required by various emerging problems but especially the changing manpower needs of the agricultural industry. The Curriculum Development Unit of the AETB was affected by economic hardship in the early 1980's and operations were cut back. The Unit was unable to keep curriculum development in pace with changes in training programmes,particularly the change from a certificate to a PCD training programme implemented in 1984.

4.2 History- Vudal and Popondetta Agricultural College.

The Agricultural Education and Training Branch initially established Vudal Agricultural College as a Diploma College and Popodetta Agricultural College as a Certificate College.

These two colleges offered the established curricula (Diploma & Certificate) until the mid-seventies, when the Diploma curriculum at Vudal Agricultural College was phased out and the College was down graded to a Certificate College. The reason for the change is not clear, but it seems that the change was made to meet the manpower needs of the industry - a need for more RDTs than RDOs. This cycle has reversed recently resulting in Vudal Agricultural College being reinstated as a Diploma College.

4.3 Highlands Agricultural College (HAC).

Highlands Agricultural College was founded in 1973, initially as a Farmer Training Centre. However, because of the demand for rural development technicians, the college was soon upgraded to a Certificate College and operated at that level until 1983/84, when it was further upgraded to a Diploma College.

About the same time as the Highlands Agricultural College was being established, the Government had also decided to allow an initial intake of students for an agricultural degree programme at the University of Papua New Guinea. At that time there were very few qualified Papua New Guineans in the Research Division of NDAL and the Government's aim was to replace expatriates with Papua New Guineans as quickly as possible. Since then the University has produced some 400 plus graduates with a Bachelor of Agricultural Science degree.

4.4 Sepik Agricultural College.

In 1979 it was (politically) decided that a fourth agricultural college was to be built, the Sepik Agricultural College in the East Sepik Province. Although there was really no manpower need for a fourth agricultural college, politically it was difficult to dispute because a of strong emphasis on equal distribution of development resources on a regional basis. So the fourth college was established as a certificate college with a loan from the Asian Development Bank. Thus by late 70s and early 80s the Department was running four Certificate Agricultural Colleges, and a four year degree course at the University of Papua New Guinea.

The entry qualification for the bachelor degree program was set at grade twelve (12) or its equivalent, while the entrance to certificate programmes was set, for all colleges, at grade 10 with good passes in English, Maths ,and Science.

4.5 Latest Change.

In 1983 the Government engaged a Mackillop's Consultant of Australia to review the manpower requirements of agriculture, particularly in the public sector. The consultant found that there were more certificate graduates in the market than were necessary and concluded his report with the following recommendations:

1 That the Vudal Agricultural College be re-upgraded to a Diploma college.

2 That the Highlands Agricultural College become an Inservice Training College and conduct the Post Certificate Diploma course together with other inservice courses.

3 That the Popondetta and Sepik Agricultural Colleges continue with their certificate training programme.

4.6 Curriculum Problems.

These recommendations were accepted by the Government toward the end of the 1983. The change was effected in January of the following year. In principle all was well, however, a major problem was the identification and compilation of a suitable curriculum for the P.C.D. programme. Because there was no preparatory work on training needs and thus the curriculum prior to the change, H.A.C staff found it difficult to decide just what the educational output should be and thus what materials were suitable for the Post Certificate Diploma curriculum. The lack of information was realised but the staff could not do very much about it within the three months allowed. With utmost efforts, the staff were able to develop a curriculum for the PCD course and meet a teaching deadline of early 1984. This curriculum has been taught ever since without either major review or evaluation.

4.7 Attempted solutions.

The Government, realising the problems of hasty curriculum development, immediately recruited several expatriates, to review the farm management part of the PCD course because the emphasis of the PCD program was supposed to

be on management. However, the expatriates were prevented by time and financial constraints from making solid reviews. Nevertheless, there were some internal curriculum reviews done by HAC staff. It is not suggested here that the present curriculum may not be adequately serving the needs of the industry. However, it is suggested that a satisfactory correlation between the present PCD curriculum and the training needs at industry level has not been adequately determined. It may well be that the present curriculum is satisfactory, however, it is the author's contention that this needs to be validated. It is his belief that no long standing curriculum can claim to be satisfactory, without regular evaluation and validation , when technology, environmental and economic factors are changing all the time. To keep pace with these changes regular review and evaluation of a curriculum is necessary.

4.8 Curriculum Development Unit.

Monitoring curriculum development, and evaluation is an important activity for maintaining the quality of education and training. DAL recognised this and established a Curriculum Unit in the sixties, which was solely responsible for monitoring curriculum development, and curriculum evaluation. The Unit has been responsible for excellent curriculum work until the economic crises of the mid-eighties. A brief review of the history of P.N.G. agricultural curriculum development over the years suggests that the original diploma curriculum for the Vudal Agricultural College was adapted from that of the Queensland Agricultural College. This curriculum was taught for the period of the diploma training programme with regular reviews and updating of the curriculum until it was phased out in 1977 or 78.

The certificate course curriculum was developed jointly by the teaching staff of the colleges and the Curriculum Unit of the Department (DAL). The latest version of this curriculum was produced in 1978/79. Since then it was monitored and evaluated until financial constraints halted this work in the 1980s.

4.9 Current HAC Training Program.

The current training programme at HAC consists of a one year PCD course and some thirty short inservice courses spread throughout the year. The PCD course is offered with four modules in a year. Most topics offered in each module are terminal. Only a few topics may overlap into the next modules. The courses offered are contained in the appendix 8. A major part of the course for the PCD is taught in classroom lectures and these lectures are supported by field visits. An annual field visit is also made to Cairns, Australia, where students spend two to three weeks observing agricultural activities there. The inservice courses are usually short, the duration ranging from two to twelve weeks.

CHAPTER 2 : LITERATURE REVIEW

2.1 Introduction.

The literature review for this study is discussed under two headings. One focuses on curriculum development with particular reference to curriculum development at the HAC The second addresses curriculum evaluation.

2.2 Curriculum Development.

Curriculum development should follow a systematic model (Sinnett,1976), with its aim or goal being established first. This should be followed by the analysis of the training needed to achieve the goals. It is suggested by Sinnett (1976) that after goals of curricula have been established, the model should allow and cater for contributions from a wide range of people and relevant organisations. The contributions from relevant people are necessary to provide enrichment to curriculum design and to achieve its ultimate stated goals. It is particularly important for vocational training institutions such as HAC to purposely involve the employers for the purpose of determining relevance and competence. A need for curriculum change should rightly occur at lower levels in an organisation, such as at a training institution or a local community level (Sinnett, 1976). The need should be identified by community, teachers, administrators or students in a form of a complaint or even more importantly, through student assessment (Sinnett,1976). Ideas about developing a better curriculum then get filtered up through the management hierarchy. Decision is made after considering resource allocation.

2.3. Curriculum Development Process.

The modelling approach in curriculum development is supported by O'Hamton (1976), who calls curriculum development the "three Models process". The three models are; management, systematic and open access.

2.3.1. Management Models.

A management model for curriculum development is familiar to many educators. The process itself follows the management hierarchy (O'Hamton,1976). Information concerning curriculum development is usually talked about at lower levels by people such as teachers, immediate supervisors, institutional administrators or other concerned people. The information is then passed upwards through the management hierarchy. As it goes through it gets screened at every level of management. The ultimate management body or individual administrator makes the final decision after considering the availability and allocation of necessary resources.

2.3.2 The Systematic Models.

A systematic model is goals oriented and is usually preceded by both a manpower and training needs review. As defined by O'Hamton,(1976),the purposes or the aims of curricula are established first and the learning tasks or activities are then carefully aligned with those purposes and aims. Decisions regarding course content are not usually made by top management but by professional people and are mediated by the original purposes and aims of the curriculum and subsequently developed learning goals. Decision makers in this model could be teachers ,special curriculum officers or even a consultant body such as the one that conducted P.N.G. manpower review in 1983. Resources are then allocated by management as necessary to achieve the stated learning goals.

The systematic approach to curriculum planning is also viewed by Saylor and Alexander,(1960) as very important to curriculum planning and development. They see the process of curriculum development and improvement as relying on cooperative efforts of educators from national, local and community levels, together with other people and organisations outside of the main stream of education.

2.3.3 The Open Access Models.

Open access models as suggested by Sinnett,(1976), are based on ideas put forward by interest groups outside the mainstream of education through casual conversation or discussion. There is no definite aim for the discussion but it is an open discussion that may result in the formulation of a statement about curriculum development or evaluation. This could also occur in a curriculum meeting. Open Access models allow much discussion and consideration of different circumstances before statements of the purposes and aims are formulated as guides for final consideration by professional people who would be constructing the learning experiences. A characteristic of this approach is that is based on humanistic value judgement. The approach is very open for anybody to contribute ideas freely before any statements are formulated.

2.3.4 Other Forces.

Another important force that affects curriculum planning is a National Curriculum Unit or a special project which may act independently in an effort to upgrade or to establish new curricula for schools and colleges. These efforts are usually by professional people who are delegated with specific responsibility of developing curriculum by largely drawing on their own expertise.

2.4 Curriculum Development Implication for HAC.

As noted so far,a decision to change a curriculum or to develop a new curriculum, should be based on a collective value judgement of experienced people such as teachers, employers, administrators, graduates and other relevant organisations or individuals. Such a collective view provides the basis for positive formulation of curriculum goals and objectives. This process also provides a quality to curriculum development that could give a lot of confidence to curriculum developers and particularly teachers of ongoing programmes.

It is apparent from the discussion so far that the model which the NDAL followed, using manpower reviews as the only basis for changing the training programmes, without considering the curriculum content could perhaps be viewed as unprofessional. It seems clear that for a curriculum to be changed, a need for this change must first be identified. After having identified such a need, the next step should be to review and restructure suitable courses or develop new ones that more closely meet the training needs of the students and better achieve the aims and objectives of the revised curricula.

Since this procedure was ignored for the PDC curriculum, an alternative approach for the NDAL would have been to allow, after the recommendation to upgrade was accepted, for all senior lecturers, administrators, employers and other relevant people from the community to have a" Brainstorming" session on curriculum matters. This session could perhaps have provided an opportunity to establish the initial guidelines and directions for the new PCD curriculum. General goals and objectives and perhaps, the general outline of the course content could have been established. This would have been sufficient to guide and boost the confidence of lecturers when arranging course contents at a latter date in their own colleges . The Design A Curriculum(DACUM) process advocates this approach very strongly.

2.5 Curriculum Need Assessment.

The same group that was used to determine the manpower requirement of the industry, could also have studied and determined the" need for curriculum change". What the manpower study did infact find out was not the lack of manpower, but inability of the available officers to perform duties at a higher than their present level satisfactorily. At the time of the study, the manpower available in the public sector organisation was heavily concentrated at the rural development technicians (RDT) level and there were insufficient numbers of rural development officers (RDO). The study noted that for RDTs to perform Rural Development Officers (RDO) duties they required further training. Thus, it was determined that a Post Certificate Diploma course was needed to upgrade these officers (RDTs) skills and knowledge so that they could perform

satisfactorily as Rural Development Officers.

The major weakness in this approach was that while it assumed further training was needed it failed to suggest what type of courses and their content would constitute a satisfactory post certificate diploma course. From a curriculum development point of view the study had failed to establish the level of knowledge and skills that should be acquired by potential rural development officers (RDOs).

For the PCD curriculum to be relevant or useful for RDOs, the curriculum content must be based on the training needs identified at the job level. Otherwise a training programme would seem to have no immediate usefulness to the students' career. This seems to be the present situation with the Highlands Agricultural College PCD curriculum.

2.6 Curriculum Evaluation.

Curriculum evaluation is the term used to refer to the process carried out to determine worth or the quality of a training programme. In other words, evaluating a curriculum is making a judgment about the contents to determine its relevance to learners. Siklbech, (1984) states, that the fundamental purpose of curriculum evaluation is to justify the use of materials and intellectual resources and determine if they have enabled an achievement of quality learning for students.

Sagar and Alexander,(1973),define curriculum evaluation as the process or act of placing a value on training or determining its merits.

Girdux, Penna and Pinar, (1981) describe curriculum evaluation as the process of determining to what extent the set educational objectives are actually being realised by the curriculum, instruction, and students' learning and subsequent performance.

2.6.1 Curriculum Evaluation at Schools and Colleges.

Eraut, (1981) cites the four main kinds of curriculum evaluation that have been usefully distinguished by Becker, Eraut and Knight, (1981), as "monitoring and trouble shooting; students assessment; staff appraisal and review of policy performance and procedures".

The view supports that of Salyar and Alexendra, (1973) that although, evaluation has only one basic goal ,the determination of the worth or value of something, it has many roles. Primarily,the appraisal of the outcome of students learning.The second purpose is to determine the value of a curriculum itself. Thirdly,it determines the effectiveness of institutional organisation and management.

2.6.2 Informal Curriculum Evaluation.

Institutional administrators and teachers maintain their informal evaluation by observing and noting unusual events and complaints (Eraut,1981). A teacher may notice a problem while reacting to a situation, providing remedy to a deviate situation or just hearing complaints from students or the public. There are two main approaches in such informal evaluation. They are 'spotting and scanning' ,Eraut,(1981). Eraut (1981), suggests that spotting,involves keeping one's eyes, and ears open and trusting that problems will come to ones notice. Scanning involves some deliberate research for problems of some kind. For example, a teacher marking a test paper may notice a common mis-understanding of a subject or a question. The teacher may even deliberately set up a specific test to find out the students level of understanding and/or level of mis-understanding as the case maybe.

If the general body of students are discontented with a particular lecturer, course content, lecture presentation or any specific issue of the course, they may decide to approach the lecturer himself. However, they may feel more relaxed and satisfied to talk to someone higher than the lecturer. If the students' approach is genuine, their concern would indicate a possible curriculum or instructional problem needing immediate correction. Such

observations and circumstances could lead to form a basis for curriculum evaluation.

2.6.3 Student Assessment.

Eruat (1981), cites student assessment as a corner stone for any formal, school based evaluation of students learning. Student assessment is commonly used in the evaluation of students behaviour as a result of the learning process. Students assessment can also be used to measure the usefulness of curriculum content.

The concept of curriculum evaluation has two important roles Eruat, (1981). Firstly it is to appraise the change in students' behaviour, before and after learning, since this is primarily what is sought from an educational curriculum. Secondly it is to determine the value of a curriculum itself.

Girdux,Penna and Pinar,(1981) go further and suggest that since the educational objectives are essentially aimed at measuring the changes in human behaviour, the actual process of evaluation is determining the degree to which these changes in human behaviour are actually taking place.

Students' assessment is accomplished through testing, measuring and assessing pupils' learning achievements. In normative assessment, individual students' progress is measured and results are compared with other members of the group or class. In criteria referenced assessment, individual students' performance is measured against a set of behavioural criteria, while in achievement assessment, individual students' achievement relative to the course objectives is measured.

The other purpose of a curriculum evaluation is to determine how effectively a curriculum is fulfilling the role it was designed for. Is the designed course suitable and relevant to the needs and level of students? In a vocational training sense one would also ask, is the training providing necessary knowledge and skills for a person to survive on a job? For students assessment to be meaningful, it is suggested that a minimum of two appraisals be carried

out, one at the beginning of a training programme and the other at the end of that training programme. The initial appraisal should provide information about the level of students' knowledge and skills before a training programme begins. The appraisal after a training programme should provide the level of students knowledge and skills after a training. The difference is the curriculum's worth. However, some professional educators such as Pinar,Girdux,and Penna,(1981) argue that two appraisal are not sufficient since over time many people forget many things that they have learned. So it is suggested that a minimum of three appraisals be included for an effective evaluation.

Furthermore, Girdux, Penna and Pinar (1981), suggest that the process of curriculum evaluation is indeed measuring the behavioural change of students. However, a particular behavioural change sought of a student is not only influenced by curriculum content but by instruction also. The process of instruction includes many variables, such as a teacher's knowledge, experience, competence, the use of teaching aids, teacher's preparation, his style or culture of presentation and so on. A curriculum evaluation should always consider these variables before a final judgment is made on the suitability or otherwise of a curriculum.

2.6.4 Teachers Appraisal.

Teacher appraisal is also vital in the process of conducting curriculum evaluation at an institutional level. Students should not be the only people to be appraised but there should also be procedures to appraise their teachers. Good teachers are usually willing to carry out self assessment and/or submit to peer group and student assessment and they will even design relevant forms as part of a self-improvement. Others, often those lacking in experience and/or competence may not be willing to participate.

2.7 Competence Based Training.

Competence based training is defining the expected attainment of knowledge and skills by each student, (Torshen,1977). The process ensures that each

student attains the minimum standard expected before he or she is passed out from the institution into the world. Torshen, (1977) points out that although some critics would criticise that competence based training seems to promote excessive homogeneity, such a view is very narrow and short sighted. Apart from the sameness, the competence based training should ensure a minimum level of attainment, a much broader knowledge and diversity to individual students than that viewed by the critics.

Often, as is the case with the agricultural training in PNG, going by course objectives is the only basis for assessing students learning. This is universal to all education systems however, such systems do not specify how competent a student has to be at the end of a course or a training program. It is often assumed that passing a course also means attaining the required competence. This assumption is not necessarily wrong except that objectives often do not specify the level of competence expected to be attained, (Torshen,1977). A student passing a course based on its objectives is assumed to have performed the necessary activities to the satisfaction of the presenter. The competence level of an achievement can only be determine if expected level of performance of learning activities are defined

The assessment system used for the Certificate in Tropical Agriculture is different from the one used for the PCD training programme.
The certificate training programme uses course objectives as the basis for testing students knowledge. The individual students' achievement expressed as a percentage is compared with the achievements of others in their group. This form of assessment is referred to as normative assessment. Criteria referenced assessment is used to assess achievement of students' practical skills. In the author's opinion, normative assessment provides an opportunity for greater discretionary assessment by teachers. In other words there is a danger that this system could allow for unnecessary influences from teachers which could distort the actual achievements by individual students.

Any such bias could possibly be curtailed by setting a minimum level of vocational competency expected to be attained for each course. That is, to successfully complete the certificate training each student should reach certain competency level for each course.

2.8 Assessment Criteria in Curriculum Development.

It is important to seriously consider and identify suitable assessment criteria that are compatible with the objectives of a training program. For example, if students assessment is based on course objectives then achievement assessment would a compatible system. Competency based training would be compatible with achievement assessment but would not be compatible with normative assessment.

2.8.1 The PCD Assessment criteria.

The assessment criteria developed for the Post Certificate Diploma are different from those of the Certificate. The system, in a way, uses competency based training by standardising the grading for all courses but it does not specify minimum level of competency that should be attained by PCD graduates to be proficient at the job level.

An example is set out below;

If Joe gets raw score of 87 out of 100 total possible then calculation of his percent score would be;

87/100 X 100 = 87%.

His percent score is now compared to a standardised score as shown below and because Joes' 87% comes within the 85% - 96% brackets he will be given a B grade or a Credit rating. The important difference between this system and normative assessment used in the certificate is that Joes' mark is not compared with achievements of others in his group, instead to a standardised precent score.

Present Grading System:

A- 97%- 100% - Distinction

B- 85%- 96% - Credit

C- 67%- 84% -Upper Pass

D- 56%- 66% - Pass

E- 55% or less- Fail

This form of assessment is probably well recognised at higher institutions, such as Massey University, New Zealand. It allows a fair assessment of individual students' performance as no discretionary assessment is allowed for though, lecturer bias during marking may have some influence on the final achievements.

The system could further be improved by setting maximum and minimum competency level for each course that can be related meaningfully to the standardised scores shown above. For example, a student maybe required to pass all farm management courses at 67% or better and rural engineering at 56% or better to obtain a diploma (PCD). This is because farm management is regarded as more useful to graduates than rural engineering. If expanded and included competency based training the above results would imply that a student with 56% in rural engineering would mean that he/she has not satisfactorially achieved the required competency. And would require greater supervision if were to perform any duties in the field of rural engineering. While 67% in farm management would mean that he will perform management duties with some supervision. Such system could be incorporated as follows:

Grading System with competency:

A- 97 -100 Distinction - very competent

B- 85% -96% Credit -Competent but needs supervision

C- 67%- 84% Upper Pass -Needs regular supervision.

D- 56%- 66% Pass- Dependent on supervision.

It is important to realised that an assessment system has to be developed along with and as part of curriculum development process.

2.9 DACM Design A Curriculum.

Indications from the literature review discussed so far suggest that, for best results, dynamic groups and a systematic process approach to curriculum development should be used. This view is strongly advocated and supported by the DACUM model of Sinnett, (1976).

The philosophy of DACUM is to use dynamic groups and follow the process of curriculum development in a logical sequence from start to finish to derive a sound conclusion. This will ensure sound development of curriculum content. DACUM methodology encompasses a wide spectrum of curriculum development, from organisation and group formation through curriculum design and instruction to students assessment and curriculum evaluation.
However, Sinnett, (1976) recognises differences in the approach used by various groups depending on the interest of the group. Examples of such variation are noted below:

The Sesckatchewan New Start group uses DACUM looking particularly at content organisation, in a six step model:

1. Defining terminal behaviour.
2. Selecting, evaluating technique.
3. Defining instructional unit objectives.
4. Designing instructional unit evaluation.
5. Preparing learning activities.
6. Preparing individual students activities.

Another example of a DACUM course from British Colombia where dynamic group process is used to look at a much broader spectrum of curriculum development. The steps taken are:

1.Establish a National or Provincial Advisory Board.

2.Establish Curriculum Sub-committees.

3a.Develop, publish and validate curriculum
Charts.

3b.Identify learning resources.

4a.Develop, publish and validate syllabus modules.

4b.Relate and code resources to syllabus.

5.Introduce charts and syllabus to instructors.

6.Monitor effectiveness and suitability of curriculum content.

Although the two approaches observed in the above examples differ remarkably, the theme of DACUM is clear- curriculum development must be systematic.

An interesting example, and one quite relevant to HAC PDC curriculum development endeavour, is proposed by Mitchell, (1975) of Ontario Ministry of Colleges and Universities Institutional Training Branch. He calls it INDECORE, (Industry Development Core). Mitchell, (1975) uses DACUM from an industry perspective and identifies the skills and knowledge held by an employee at entry together with the on the job skills and the management skills required.

The model proposed by Mitchell is:

1.Define the job.

2.Select INDECORE participants, 10-15 people

must be active on the job.

-free of bias.

-good communicatiors

-recognised as top people in the area.

3.Identify areas that the trainee must be competent in (general areas of competence or terminal objectives).

4.Carry out a group process to identify skills (development of bands) each band becoming a course

The proposed model is interesting to this study because the PCD training program is concerned with upgrading the skills of the RDTs. Developing a suitable PCD curriculum requires minimum competence level attained by certificate graduates entering the industry (PDALs); the skills proficiency attained on the job; and the knowledge and skills required by RDTs to be upgraded to RDOs.

2.9.1 Canadian Farm Management Task List.

The Canadian Farm Management task list developed by DACUM methodology and the competence based training at the Holland College of Charlotletown, (1974) shows a fine example of these themes and achievements. The farm management task list identifies an activity or a course objective and lists the events followed to attain this objective or activity in the chronological sequence from start to finish. Further this list established the competencies or proficiencies one might display through performance.

The proficiency scale ranges from 0- 4 with zero representing not sufficient knowledge and experience for the particular working environment. At the top of the scale is 4, representing an employee who can perform the skills well, without supervision and assistance, and can lead others to do so too.

2.9 Current Staff at HAC.

Currently there are eleven (11) lecturing staff excluding administrative staff. Most of the lecturing staff are Diplomates, however, nearly all have undertaken post graduate study overseas at some time in the last ten years. Most of them have a post graduate diploma qualification in their specific discipline. Staff training- acquiring new discipline knowledge and skills- does not necessarily enable staff to better determine the exact knowledge required by RDTs to become RDOs. Therefore, in the authors' opinion, HAC still needs to do a training needs assessment to help to determine the training that is needed by these people within the agricultural industry.

2.10 PCD Students.

Participants in the PCD programme are all required to be certificate holders with at least three years field experience. The PCD course programme is specifically offered as a bridging course for Rural Development Technicians (RDT). Completing this course, should enable RDTs to progress to Rural Development Officer (RDO) positions and perform well in them. Rural Development Officers require a diploma qualification or better.

CHAPTER 3: METHODOLOGY and MATERIAL.

3.1 Introduction.

A training needs study may be prompted by any of the following situations. A study may be initiated by the lack of performance by officers on the job, lack of sufficient adequately trained manpower, public concern for the quality of education and training or lack of professional satisfaction.

The lack of satisfactory performance by officers is a common complaint by management of concerned organisations. The usual assumption is that poorly performing officers lack adequate educational qualification to sustain required standards of performance. Often the assumption is correct, however one must not forget that there are other factors that could just as easily influence the situation. For an example, lack of motivation in the system, health problems, family problems, resource constraints, isolation from towns and cities and so on may also be important influencing factors. The only way to find out the truth is to conduct a training needs assessment.

To determine that there is lack of adequately trained manpower is not difficult, however determining the right kind of training to fulfil the required manpower is a difficult task. Determining the right kind of training requires, as a first step, a detailed analysis of the expected performance.

A lack of professional satisfaction may crop up among the professionals themselves. In most cases they should be able to provide constructive alternatives, however sometimes they may not be able to define the problem, let alone a remedy. In this case a training needs assessment may pin point a problem and suggest a solution.

3.2 Training Needs Assessment.

A training needs assessment can be conducted using a variety of different methods. However the appropriateness of a method will largely be determined by the type of data needed and how effectively that data can be gathered. Some available methods have been identified by Abella, (1989) as suitable:

1. Examination of past documents method.
2. The questionnaire method.
3. The group or individual interview method.
4. Expert observation method.
5. Seeking professional views from professional people.

For this study, the following methods were chosen as relevant and adequate to provide the necessary data for the study's purpose.
They were;

1. Examination of past documents.
2. The questionnaire method.
3. Seeking professional comments from professional people.

3.3 Examination of Documents.

This involves a study of relevant documents that may contain information needed in a training needs analysis (Abella,1989). The examination of such documents should provide opportunity to note important information that could be relevant for the study. For this study two types of documents were sought for examination. They were (a) the curriculum and/or course outlines of management courses from some of the better known Agricultural Institutions within the Commonwealth and (b) the duty instructions of the target group, the respondents of the questionnaire.

3.3.1 Study of curricula.

It was intended that the course outlines received from various institutions would be compared with those of the H.A.C. A high coincidence would indicate the likly relevance or suitability of the content in H.A.C courses while a low coincidence would indicate areas for review within the H.A.C. curriculum.

The present H.A.C. curriculum consists of modules on crops, livestock, rural engineering and farm management. While the major emphasis was believed to

have been on management, nothing in the curriculum confirms this emphasis. The P.C.D. curriculum is presented in the appendix 8.

3.3.1.1 Farm Management Course.

This part of the study will specifically examine and analyze the contents of the present farm management course at HAC. The present course begins with record keeping and finishes with a module on general management. The first module covers record keeping, report writing and a general introduction to management. The second module concentrates on farm production factors. The third module covers feasibility studies. The final farm management module consists of a general management course which is also offered to progressive managers in other Departments by the PNG Administrative College and is known there as the Introductory Management course.

Some of questions that one can ask are; are all these farm management courses immediately relevant? Are project feasibility studies immediately useful? In detail, are the HAC farm management modules or course content organised in a logical sequence? It was intended that these and other similar questions would be answered when the data from the survey questionnaire have been analyzed.

3.3.2 Duty Instruction of respondents.

The intention of collecting duty instructions was to compare what respondents say their duties are with what the official version of their duties are as set out in the duty instructions. A sample of typical duty instructions for an RDO and an RDT are to be found in the appendix 4.

3.4 Questionnaire Methods.

The most perferred method for similar types of study appears to be the survey questionnaire type. It is probably so because it is the most comprehensive and cost effective method of gathering training needs data. The same method can be used to collect data from both the target and their employers, though the

questions themselves may have to change for each group to suit the needs of the study.

For this study a set of 50 questionnaires were designed seeking responses from graduates of the present HAC PCD training programme. However, to enable a more comparative study, it was decided that of the 50 questionnaires some 15-20 of them would be used to seek responses from graduates of other PCD type training programmes and/or from certificate graduates. With limited time and particularly resource constraints, other important sampling issues were not considered, such as evenly representative sampling and stratification according to field of respondents' specialisation.

As suggested by Abella (1989), there are two types of questions that can be asked. They are known as open ended questions or closed questions. An open ended question is asked to obtain a variety of answers. A closed question is asked to obtain restricted responses by providing a limited choice of answers. The questions used for this study were a combination of both types.
The survey questionnaire was divided into four parts; A, B, C & D.

Part A- asked for personal particulars.

Part B- asked about tasks performed.

Part C- asked about course outline and content.

Part D- asked for comments and suggestions for improvement.

The questions asked in both part B & C were regarded as being closed questions with respondents being restricted to choosing from a scale rating of 1 to 5 in their answers. The scale rating method was chosen because it was easier to analyze the data using numerals, than otherwise.

3.4.1 Part A-Personal Particulars.

This section requested personal particulars of respondents. Information solicited in this section, apart from the usual biographical details was information about their work. Information was sought on individual substantive and/or acting

position within each classified position, the substantive position and the classification of both their immediate supervisor and their immediate subordinates. The information gathered here was regarded as vital to enable appropriate analysis of the responses in both part B and part C. The purpose of part B & C was to collect data on the duties of RDOs and RDTs, compare them and identify the difference in tasks performed and/or in required level of performance of similar tasks. It was hoped that such distinction would highlight the progressive role from RDT to RDO or similarity of roles within each group. In other words this study was interested in identifying any major differences between the tasks performed and expecpted levels of performance by RDTs and RDOs relative to the organisational structure and seniority of individuals.

3.4.2 Part B-Task performed.

This section consisted of a series of questions about some possible tasks that might be performed by either party (RDO or RDT). They were given a frequency scale rating of 5- 0 and were asked to indicate on the frequency scale how often they performed these tasks. Five (5) on the scale, representing a daily performed task while a zero represented non or rarely performed task. These scale ratings are shown below;

5 - almost everyday

4 - once or twice a week

3 - once or twice a fortnight

2 - once or twice a month

1 - less than once a month

0 - never

While trying to identify most regularly performed duties of RDTs, RDOs the author considered it reasonable to assume that, with general agricultural extension activities, there are numerous tasks performed by extension workers that would have no relative bearing on the position or seniority of individuals. Further, the nature of these jobs may make it difficult for this survey to provide conclusive evidence of the differences in performance between these two groups, or, between the progressive responsibility of individuals.

On the other hand, it was considered reasonable to assume that different patterns of performance would emerge with management tasks.
It was intended that an individual's responses would be compared with similar items on the duty sheets for their level in the organisation. The ideal benchmark for such comparison would have been the duty instruction for each of the respodents and their respective positions. However these important documents, regrettably, were not able to be collected from respondents because of lack of copying facilities in the field. A sample duty instruction is presented in appendix 4.

The relative frequency with which each duty was perfomed, it was assumed, would indicate how commonly these duties are performed across the country. The author's task would then be to analyze the underlying abilities required of each task. That is, what would be the appropriate training that would enhance an officer's ability to perform these duties better.

The underlying abilities identified here would then be related to responses to part C of the questionnaire which is designed to solicit respodents' preception of how relevant or suitable the present PCD courses are. It was hoped that a correlation between these two sets of responses, could provide a basis for additions, deletions, or validation for continuation of the present PCD training programme and its curriculum.

3.4.3 Part C- Course outline/topic.

This section asks only PCD graduates to rate how useful the present PCD course has been to them in their work. The responses received will be cross-checked with part B for consistency. For example, suppose that a marked difference is observed in part B for a task that is only performed by RDOs and the underlying abilities are identified as such. Now if in section C we note that responses indicate a course covering these abilities was very useful, then this would give a positive value for training analysis. The final aggregated outcome of the responses from this section should indicate the suitability or otherwise

of the present PCD curriculum.

3.4.4 Part D-Option for comments or suggestions.

This section was intended to seek suggestions from the respondents for relevant course topics or content for either inclusion in or deletion from the P.C.D. Responses from the graduates of current training programme could be regarded as a form of evaluation of the current training programme. A copy of the questionnaire is included in appendix 2.

3.5 Hypotheses

While there were no specific hypotheses formulated for this study, it was assumed that the present Post Certificate Diploma course does not adequately cover all important areas nor does it place sufficient emphasis on more important courses. The author's view is biased towards the importance of management courses. However, this view is in line with the original intention of the PCD course to emphasise the management aspects of an RDO's job rather than technical aspects.

It was assumed therefore that, either the management course did not cover the management aspects adequately or the course contents were not aligned to on-the-job performance requirements of RDOs. This study was undertaken to validate or otherwise these assumptions.

3.6 Plan for this Study

3.6.1 Study of Curricula Documents.

With the above assumptions in mind, the following actions were taken to obtain necessary data for this study.

To obtain curriculum documents;

a) A letter was sent to the HAC Principal, attention Senior Lecturer Management Studies requesting an outline of the PCD Farm management course.

b) A circular letter was sent to a number of Agricultural Colleges and

Universities within the Commonwealth including the following;

- Fiji Agricultural College.
- Lincoln University, NZ
- Orange Agr. College, Australia.
- University of South Pacific, W. Samoa.
- Qeensland Agricultural College, Aust.
- Managa Management Training Institute, Swaziland.
- Charles Stuart University, Australia.

3.6.2 Study of Duty Instructions.

a) Several telephone calls were made to extension workers personally known to the author requesting a copy of their duty instructions.

b) The author requested a colleague to obtain sets of duty instructions from sources known to them.

3.6.3 Survey Questionnaire Methods.

A survey questionnaire was drafted and submitted to the author's supervisor for examination and ammendments. The approved questionnaire was sent (50 copies) to the Principal, HAC requesting his assistance with distribution through the inservice training network system. Completed questionnaires were to be collected by the Principal and mailed back to New Zealand.

A cheque for Aus.$65-00 was sent, along with the questionnaires, to cover the mailing expenses of completed questionnaires from the Provinces to HAC and then onto New Zealand.

3.6.4 The author anticipated having personal interviews with as many as possible of the participants during his home leave but this was not possible for two reasons;

a) Financial resource constraints in PNG.

b) Time and distance limitations on the author.

CHAPTER 4: RESULTS.

4.1 Introduction.

As mentioned above, a number of methods were used for data gathering in this study. The results are presented below.

4.2. Study of documents (Curriculum comparision).

Replies were recieved from the following commonwealth agricultural institutions;

4.2a Fiji College of Agricultural.

4.2b. University of South Pacific.

4.2c. Lincoln University

4.2d Orange College of Agriculture.

4.2e Charles Stuart university.

The results from comparing farm management curricula/ content from HAC and the above institutions are summarised in table 4.2a.

Table 4.2a- Curriculum Content comparision results.

COURSE TOPICS /CONTENT	HAC	OAC	FCA	USP	L U	CSU
RECORDS-Physical	/	/	/	/	/	/
-Financial	/	/	/	/	/	/
REPORT WRITING.	/	x	/	x	x	x
-TYPES	/	x	/	x	x	x
-Actual writing	/	x	/	x	x	x
FACTORS OF PRODUCTION.	/	/	/	/	?	?
-Land	/	/	/	/	?	?

-Labour	/	/	/	/	?	?
-Capital	/	/	/	/	?	?
-Management	/	/	/	/	?	?
PROJECT PLANNING.	/	?	?	x	x	x
-Feasibility	/	?	?	x	x	x
-Appraisal&Design	/	?	?	x	x	x
-Marketing	/	x	?	x	x	x
BUDGETING	/	/	/	/	/	/
-Gross margin	/	/	/	/	/	/
-Partial budget	/	/	/	/	/	/
-Cash flow budget	/	/	/	/	/	/
MANAGEMENT	/	/	/	/	?	x
-Communication	/	/	/	/	?	x
-Problem solving	/	/	/	/	?	x
Planning	/	/	/	/	?	x
-Organising	/	?	/	/	?	x
-Controlling	/	?	/	/	?	x
- Directing	/	?	/	/	?	x
FARM PLANNING	/	/	/	/	/	/
AGRICULTURAL MARKETING	/	/	/	/	x	/

HAC- Highlands Agricultural College	**KEY USED**
OAC- Organge Agricultural College	/= Contained
FCA- Fiji College of Agriculture	X= Not Contained
USP- University of South Pacific	?= Unsure
CSU- Charles Sturt University	
LU- Lincoln University	

4.2.1 Summary of the results.

From the table above, it can be seen that most of the titles of modules offered by each institution are similar. Exceptions are:

4.2.1a. Report Writing offered by HAC as part of PCD course is not offered by other institutions except for Fiji College of Agriculture.

4.2.1b. Project Planning offered by HAC is the only course not offered by any other institution.

4.2.1c. There was some doubt about whether units in management, organisation and control were adequately covered in courses offered by institutions marked with a question mark. The information as provided gave only a very brief outline of the course content and it was difficult to determine the extent of coverage.

After studying curriculum documents the author's initial reaction was that the Project Planning and Management course included in the current PCD course may not be relevent to RDOs immediate needs.

4.3 Survey Questionnaire Results.

The questions in the survey contained a detailed list of some common tasks that were expected to form the routine duties for RDOs and/or RDTs. The intent of this part of the study was to classify the responses and see if it were possible to identify any pattern of responses relative to the position of the individual in the organisation and, if there were any remarkable differences between the responses of RDOs and RDTs. As was mentioned in the previous chapter, the duties of extension workers cover a wide range of activities and

sometimes the pattern of duties may not be consistent with organisational structure nor for that matter the organisation's duty instructions to it's officers. Daily duties are often distorted by emerging circumstances of the day and these may vary from day to day.

A copy of the survey questionniare used is presented in the apendix 2.

4.4 Response to the Questionnaire

A total of 50 questionnaires were distributed-35 to PCD graduates and 15 to RDTs and other diploma graduates. Of the 50 questionnaires distributed 20 were returned from PCD graduates and 17 from the DRTs and other diplomates. This gives an overall return rate of 74%.

4.4.1 Results of Part A.

Table 4.4a : Summary of results for Part A.

Handling Finance

Pay Labourers	Daily	F/nightly	Monthly	never
R.D.T.	0	2	2	3
RDT/ARDO	0	4	0	6
RDO	0	6	4	5
RDO/ADRDO	0	2	1	2
DRDO	0	0	0	0
TOTAL	0	14	7	16
Collecting P/Money				
RDT	0	4	3	0
RDT/ARDO	0	1	4	5
RDO	0	2	10	4
RDO/ADRDO	0	0	0	4
DRDO	0	0	0	0
TOTAL	0	7	17	13

Produce Buying				
RDT	2	4	1	0
RDT/ARDO	0	0	7	3
RDO	1	1	4	9
RDO/ADRDO	0	0	0	4
DRDO	0	0	0	0
TOTAL	3	5	12	16
Buying Gov/St.Item				
RDT	0	0	1	6
RDT/RDO	0	2	5	3
RDO	0	3	8	4
RDO/ADRDO	0	1	4	0
DRDO	0	0	0	0
TOTAL	0	6	18	13
Buying using ILPOC				
RDT	0	2	4	1
RDT/RDO	0	2	4	4
RDO	2	2	6	6
RDO/DRDO	0	4	0	0
RDDO	0	0	0	0
TOTAL	2	10	14	11
Report Writing.				
Field Report				
RDT	5	0	0	2
RDT/ARDO	0	3	4	3
RDO	3	3	6	3
RDO/ADRDO	0	4	0	1
TOTAL	8	10	10	9

Official correspodence				
RDT	2	2	3	0
RDT/ARDO	3	5	0	2
RDO	4	8	2	2
RDO/ARDO	0	2	2	0
DRDO	0	0	0	0
TOTAl	9	17	7	4
Special Review Report				
RDT	0	0	2	5
RDT/RDO	1	2	4	3
RDO	2	3	6	5
RDO/ADRDO	2	2	0	0
DRDO	0	0	0	0
TOTAL	5	7	12	13
Supervision.				
Subordinates				
RDT	0	2	0	5
RDT/ADRO	2	3	3	0
RDO	4	5	3	4
RDO/ADRDO	2	0	4	0
TOTAL	8	10	10	9
Permanent labourers				
RDT	3	0	3	1
RDT/RDO	5	4	1	0
RDO	3	5	4	4
RDO/DRDO	2	0	0	2
DRDO	0	0	0	0
TOTAL	13	9	8	7

Advise on Poultry

Feed Management

RDT	0	2	4	1
RDT/RDO	0	4	1	5
RDO	0	6	6	4
RDO/ADRDO	0	3	0	1
DRDO	0	0	0	0
TOTAL	0	15	11	11

Husbandary Management

RDT	0	2	6	6
RDT/RDO	0	2	0	0
RDO	0	6	10	0
RDO/ADRDO	2	3	0	0
DRDO	0	0	0	0
TOTAL	2	13	16	6

Disease and medication

RDT	0	2	5	0
RDT/ARDO	0	2	0	8
RDO	2	5	4	5
RDO/DRDO	0	0	4	0
DRDO	0	0	0	0
TOTAL	2	9	13	13

Marketing

RDT	0	3	3	1
RDT/ARDO	0	2	0	8
RDO	0	4	5	4
RDO/DRDO	0	2	2	0
DRDO	0	0	0	0
TOTAL	0	11	10	13

Gross Margin				
RDT	0	0	5	2
RDT/RDO	0	0	2	7
RDO	2	3	7	5
RDO/ADRDO	0	3	0	1
DRDO	0	0	0	0
TOTAL	2	6	14	15
Budgeting for project				
RDT	0	0	7	0
RDT/RDO	0	2	0	8
RDO	2	4	3	7
RDO/DRDO	0	2	2	0
DRDO	0	0	0	0
TOTAL	2	8	12	15
General extension visit				
RDT	0	3	6	6
RDT/RDO	0	0	2	0
RDO	0	8	8	0
RDO/ADRDO	0	2	2	0
DRDO	0	0	0	0
TOTAL	0	13	18	6
Advise on Piggery				
Feed management				
RDT	0	0	7	0
RDT/RDO	0	0	2	8
RDO	0	4	6	6
RDO/ADRDO	0	2	2	0
DRDO	0	0	0	0
TOTAL	0	6	17	14

Husbandary Management				
RDT	0	0	2	5
RDT/ARDO	0	0	9	1
RDO	0	4	8	4
RDO/ADRDO	0	2	2	0
DRDO	0	0	0	0
TOTAL	0	6	21	10
Disease Control				
RDT	0	0	2	5
RDT/ARDO	0	0	9	1
RDO	0	1	9	6
RDO/ADRDO	0	2	2	0
DRDO	0	0	0	0
TOTAL	0	3	22	12
Marketing				
RDT	0	0	2	5
RDT/ARDO	0	0	7	3
RDO	0	3	6	6
RDO/ADRDO	0	2	1	2
DRDO	0	0	0	0
TOTAL	0	5	16	16
Gross Margin				
RDT	0	0	2	5
RDT/ARDO	0	2	5	3
RDO	0	3	7	6
RDO/ADRDO	0	0	2	2
DRDO	0	0	0	0
TOTAL	0	5	16	16

Budgeting for Project				
RDT	0	3	3	1
RDT/ARDO	2	0	8	0
RDO	4	6	1	5
RDO/ADRDO	4	0	0	0
DRDO	0	0	0	0
TOTAL	10	9	12	6
General extension visit				
RDT	0	0	0	15
RDT/ARDO	0	0	0	2
RDO	0	0	0	16
RDO/ADRDO	0	0	0	4
TOTAL	0	0	0	37
Disease Control				
RDT	0	1	5	1
RDT/ARDO	0	2	5	3
RDO	1	5	5	5
RDO/ADRDO	2	0	1	1
DRDO	0	0	0	0
TOTAL	3	8	16	10
Marketing				
RDT	0	0	2	5
RDT/RDO	0	2	8	0
RDO	2	5	4	3
RDO/ADRDO	0	0	2	2
DRDO	0	0	0	0
TOTAL	2	7	18	10

Distribution- P/material				
RDT	0	1	0	6
RDT/ARDO	0	3	7	0
RDO	0	7	5	4
RDO/ADRDO	0	0	2	2
DRDO	0	0	0	0
TOTAL	0	11	14	12
Distribution-new varieties				
RDT	0	0	3	4
RDT/ARDO	0	1	3	6
RDO	0	4	5	7
RDO/ADRDO	0	2	0	2
DRDO	0	0	0	0
TOTAL	0	7	11	19
Advise on Vegtables				
Disease Control				
RDT	0	0	3	4
RDT/RDO	1	2	5	2
RDO	2	5	7	2
RDO/ADRDO	0	0	2	2
DRDO	0	0	0	0
TOTAL	3	7	17	10
Seedlings Distribution				
RDT	0	1	3	3
RDT/ARDO	1	0	5	4
RDO	0	3	5	8
RDO/ADRDO	1	0	0	3
DRDO	0	0	0	0
TOTAL	2	4	13	18

Nursery Management				
RDT	0	1	3	3
RTD/ARDO	0	2	3	5
RDO	0	4	8	4
RDO/ADRDO	0	0	2	2
DRDO	0	0	0	0
TOTAL	0	7	16	14
Marketing				
RDT	0	0	4	3
RDT/ARDO	0	1	4	5
RDO	0	4	5	7
RDO/ADRDO	0	2	2	0
DRDO	0	0	0	0
TOTAL	0	7	15	15
Budgeting				
RDT	0	0	4	3
RDT/ARDO	0	0	2	9
RDO	0	0	6	10
RDO/ADRDO	0	2	2	0
DRDO	0	0	0	0
TOTAL	0	2	14	21
Cash Crop Production				
Disease control				
RDT	0	0	7	0
RDT/ARDO	0	7	3	0
RDO	2	10	2	2
RDO/ADRDO	2	2	0	0
DRDO	0	0	0	0
TOTAL	4	19	12	2

Marketing				
RDT	0	2	3	2
RDT/RDO	0	2	5	3
RDO	2	10	2	2
RDO/ADRDO	0	0	2	2
DRDO	0	0	0	0
TOTAL	2	14	12	9
Budgeting				
RDT	0	1	6	0
RDT/ARDO	0	3	0	7
RDO	2	4	6	3
RDO/ADRDO	0	0	2	2
DRDO	0	0	0	0
TOTAL	2	8	14	13
Husbandary Management				
RDT	0	0	3	4
RTD/ARDO	0	2	0	8
RDO	2	4	5	5
RDO/ADRDO	0	2	2	0
DRDO	0	0	0	0
TOTAL	2	8	10	17
Assessing Special Project				
RDT	0	3	4	0
RDT/ARDO	0	0	3	7
RDO	3	8	4	1
RDO/ADRDO	0	0	4	0
DRDO	0	0	0	0
TOTAL	3	11	15	8

Preparing project submission				
RDT	0	0	7	0
RDT/ARDO	0	2	1	7
RDO	2	4	6	4
RDO/ADRDO	0	2	0	2
DRDO	0	0	0	0
TOTAL	2	8	14	13
General Visit				
RDT	0	6	1	0
RDT/ARDO	0	2	4	4
RDO	2	9	4	1
RDO/ADRDO	0	3	1	0
DRDO	0	0	0	0
TOAL	2	20	10	5
Project Planning.				
Coffee				
RDT	0	0	0	7
RDT/ARDO	0	0	1	9
RDO	0	0	2	14
RDO/ADRDO	2	0	2	0
DRDO	0	0	0	0
TOTAL	2	0	5	30
Cocoa				
RDT	0	0	0	7
RDT/ARDO	0	0	2	8
RDO	0	0	1	15
RDO/ADRDO	2	0	2	0
DRDO	0	0	0	0
TOAL	2	0	5	30

Coconut				
RDT	0	0	0	7
RDT/ARDO	0	0	2	8
RDO	0	1	3	13
RDO/ADRDO	2	1	0	0
DRDO	0	0	0	0
TOAL	2	2	5	28
Oil Palm				
RDT	0	0	0	7
RDT/ARDO	0	0	0	10
RDO	0	0	0	16
RDO/DRDO	0	0	0	4
DRDO	0	0	0	0
TOTAL	0	0	0	37
Piggery				
RDT	0	0	0	7
RDT/ARDO	0	2	2	6
RDO	0	0	2	14
RDO/ADRDO	2	2	0	0
DRDO	0	0	0	0
TOAL	2	4	4	27
Poultry				
RDT	0	0	0	7
RDT/ARDO	0	0	0	10
RDO	0	0	0	16
RDO/ADRDO	0	0	4	0
DRDO	0	0	0	0
TOTAL	0	0	4	33

Others				
RDT	0	0	0	7
RDT/ARDO	0	0	0	10
RDO	0	0	0	16
RDO/ADRDO	0	0	4	0
DRDO	0	0	0	0
TOTAL	0	0	4	33
Planning project for Gov. Funding				
Coffee				
RDT	0	0	0	7
RDT/ARDO	0	0	2	8
RDO	0	0	1	15
RDO/ADRDO	2	0	2	0
DRDO	0	0	0	0
TOTAL	2	0	5	30
Cocoa				
RDT	0	0	0	7
RDT/ARDO	0	0	3	7
RDO	0	0	2	14
RDO/ADRDO	0	4	0	0
DRDO	0	0	0	0
TOTAL	0	4	5	28
Coconut				
RDT	0	0	0	7
RDT/ARDO	0	0	3	7
RDO	0	0	4	12
RDO/ADRDO	2	2	0	0
DRDO	0	0	0	0
TOTAL	2	2	7	26

Oil Palm				
RDT	0	0	0	7
RDT/ARDO	0	0	0	10
RDO	0	0	0	16
RDO/DRDO	0	0	0	4
DRDO	0	0	0	0
TOTAL	0	0	0	37
Piggery				
RDT	0	0	0	7
RDT/RDO	0	2	1	7
RDO	0	1	1	14
RDO/ADRDO	0	1	2	1
DRDO	0	0	0	0
TOTAL	0	4	4	29
Poultry				
RDT	0	0	0	7
RDT/ARDO	0	0	2	8
RDO	0	2	2	12
RDO/ADRDO	0	3	1	0
DRDO	0	0	0	0
TOTAL	0	5	5	27
Others				
RDT	0	0	0	7
RDT/ARDO	0	0	0	10
RDO	0	0	4	12
RDO/ADRDO	0	0	4	0
DRDO	0	0	0	0
TOTAL	0	0	8	29

4.4.2 Results of Part B.

Part B of the questionnaire requested respondents to indicate the tasks performed and the frequency of performance. To make the analysis of the results more meaniful it was decided to divide the responses obtained into two groups; the management and general duties.

4.4.2.1 Management Duties.

Questions regarded as management duties were:

-Handling of finance.

-Report writing

-Supervision (subordinates and labourers)

-Project preparation for both Government and private funding

4.4.2.2 General extension duties

Duties listed under general extension were;

-Advise poultry farmers

-Advise piggery farmers

-Advise perennial crop farmers

-Advise food crop farmers

4.4.2.1 Management duties

4.4.2.1.1 Handling Finance.

Management aspects cover a wide spectrum of responsibilities and to analyze every aspect would require a book length treatment. However for the purpose of this study a number of management areas were selected. This included the areas of public finance, supervision and report writing/document preparation. The first question asked under management duties pertained to the handling of public finance. Under this heading a list containing five tasks was provided. They were:

-Paying of labourers

-Collecting and receipting of public money

-Produce buying

-Buying Government stores items

-Purchasing of other materials using Government purchases order.

The results for paying labourers showed that 38% of the respondents performed this task once a week (which seemed rather odd because most wage earners are normally paid their wages once a fortnight). However, some civil servants prefer employing casual labourers on a contract basis rather than paying permanent labourers. This could explain the weekly payments. While 19% of the respondents indicated that they performed this duty once a month,it was also noted that 43% of the respondents indicated non performance of this duty.

Table 4.2b. Analysis of survey questionnaire part B.

	Analysis of Questionniare. Part B.			
	Daily	F/nightly	Monthly	Never
Handling Finance				
Pay labourers	0	14	7	16
Collect P/Money	0	7	17	13
Produce buying	3	5	12	16
Buy Gov/S item	0	6	18	13
Buy using ILPOC	2	10	14	11
Total	5	42	68	69
Percentage	2.7	22.7	36.8	37.3
Report writing				
Field report	8	10	10	9
Official corresp.	9	17	7	4
Sp/Review Report	5	7	12	13

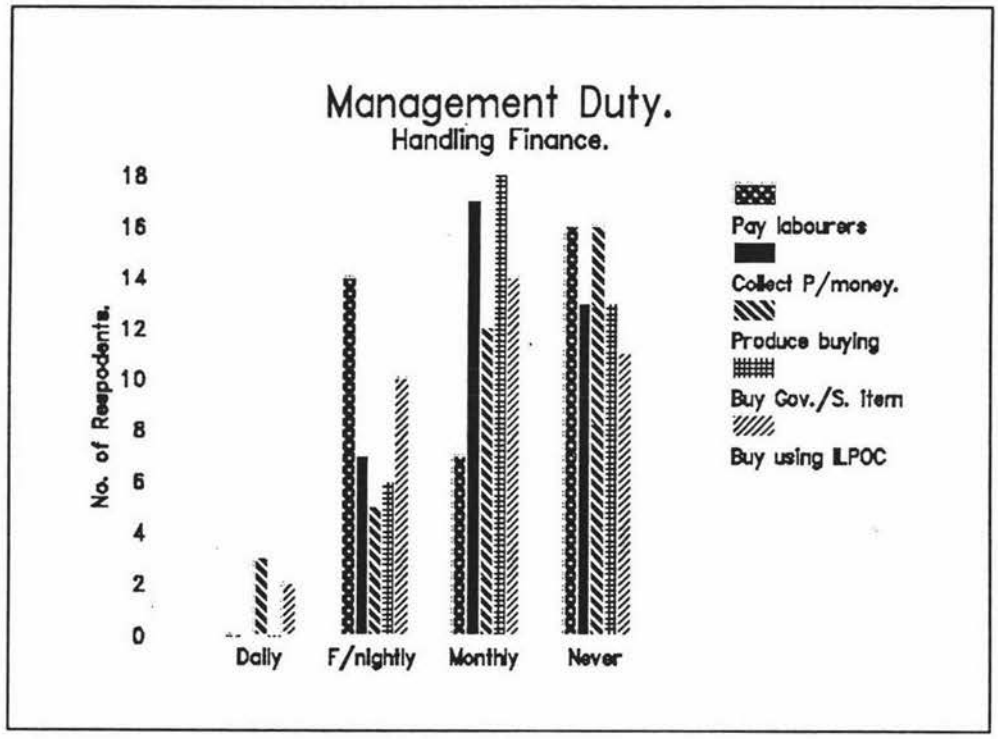
Total	22	34	29	26
Percentage	19.8	30.6	26.1	23.4
Supervision				
Subordinates	8	10	10	9
Per. Labourers	13	9	8	7
Casual labourers	15	7	8	7
Total	36	26	26	23
Percentage	32.4	23.4	23.4	20.7
Advise on Poultry				
Feed man.	0	15	11	9
Husbandary man.	2	13	16	6
Disease & med.	2	9	13	13
Marketing	0	11	10	13
Gross margin	2	6	14	15
Budgt. for Proj.	2	8	12	15
General visit	0	13	18	6
Total	8	75	94	77
Percentage	3.1	29	36.3	29.7
Advise on Piggery				
Feed man.	0	6	17	14
Husbandary man.	0	6	21	10
Disease con.	0	3	22	12
Marketing	0	4	19	14

Gross margin	0	5	16	16
Budget. for Proj.	10	9	12	6
General visit	0	0	0	37
Total	10	33	107	109
Percentage	3.9	12.7	41.3	42.1
Advise on Tree crops				
Disease con	4	19	12	2
Marketing	2	14	12	9
Budgeting	2	8	14	13
Husbandary man.	2	8	10	17
Assess. Sp/Proj.	3	11	15	8
Prepare Pr/sub.	2	8	14	13
General visit	2	20	10	5
Total	17	88	87	67
Percentage	6.6	34	33.6	25.9
Advise on food crop				
Disease con.	3	8	16	10
Marketing	2	7	18	10
Distrb.plant/Mat.	0	11	14	12
Distrb.new var.	0	7	11	19
Total	5	33	59	50
Percentage	3.4	22.3	39.9	33.8
Advise on Veg. prod.				

Disease control	3	7	17	10
Distrib. seedling	2	4	13	18
Nursery management	0	7	16	14
Marketing	0	7	15	15
Budgeting	0	2	14	23
Total	5	27	75	80
Percentage	2.7	14.6	40.5	43.2
Prepare proj.for B/fund				
Coffee	2	0	5	30
Cocoa	2	0	5	30
Coconut	2	2	5	28
Oil palm	0	0	0	37
Piggery	2	4	4	27
Poultry	0	0	4	33
Others	0	0	4	33
Total	8	6	27	218
Percentage	3.1	2.3	10.4	84.2
Preparing for Gov. Funding				
Coffee	2	0	5	30
Cocoa	0	4	5	28
Coconut	2	2	7	26
Oil palm	0	0	0	37
Piggery	0	4	4	29

poultry	0	5	5	27
Others	0	0	8	29
Total	4	15	34	206
Percentage	1.5	5.8	13.1	79.5

Figure: 4.1a. Finance Handling Responsibities.



The results for collecting and receipting of public money showed that 19% of respondents perform this task daily or weekly, while 45% indicated performing this task monthly and the remaining respondnets indicated not performing this duty at all.

For produce buying, 22% of the respodents reported performing this duty daily or weekly, while 32% indicated performance of this duty monthly and 43% of the respondents returned a negative response to this question.

The last item under handling finance was the procurement of supplies and materials using two different accounting systems. The first form of procurement is direct from the Government stores. The other form of procurement is using Government local purchase order (ILPOC). Responses indicated that 49% of the respondents were involved in purchasing materials and supplies from Government stores on a monthly basis, while 35% of the respondents indicated they were not involved with this duty at all, and 16% of the responses were spread over the other periods. On the other hand, responses observed for purchases using ILPOC showed that 32% of the respondents were purchasing needed materials once a week to once a fortnight, while 38% indicated performing this duty once a month. The remainding 30% of the respondents indicated that they had not performed this duty at all.

The responses indicated above, do not show any convincing pattern. However, further examination of these results allowed some interesting observations. For example, a high number of the senior RDOs who were either the Officer Incharge or acting as OIC of a district responded as paying labourers. A similar pattern of response was also evident with the RDTs but those RDTs who indicated paying labourers were either acting in an RDO position or were very senior RDTs occupying substantive positions of RDT 3 and 4. Lower level and junior officers (both RDOs & RDTs) indicated non involvement with this job. It was also found that purchasing materials from Government stores seemed to have been restricted to senior officers or administrators but purchasing from ILPOC was done by almost everybody.

In summary 68% of the respondent indicated performance of the tasks listed under handling of finance while 32% indicated non performance. About 21% indicated having performed these tasks once every fortnight while 37% indicated performing financial handling duties on a monthly basis.

4.4.2.1.2 Report writing

Questions on report writing and general written communication activity was included as one of the management activities. This study was concerned with identifying the amount of time spent by extension officers on correspondence and reports. It was assumed that more senior officers would spend more time doing office work than junior officers. This section requested the frequency of performance of three activities:

-Writing field reports

-Writing of official correspondence

-Writing special review reports

The author was lead to believe that the field reports or the field officers journal (FOJ), as it is commonly known, is supposed to be a compulsory report for all officers. However, the responses received in this survey did not confirm this belief. It was noted that 24% of the officers responded negatively to this question. On the other hand, 37% indicated doing this report daily to once a week which is within the expected requirement of this task. The others, some 16 - 21% of respondents indicated doing this job either once a fortnight or once a month.

The second item contained in the report writing section was on official correspondence. Responses were evenly spread with 48% of the respondents indicating their engagement on official correspondence on a daily to once a week, while 40% indicated doing this task once a fortnight to once every month and the remainder of respondents appeared to spend little if any time on correspondence.

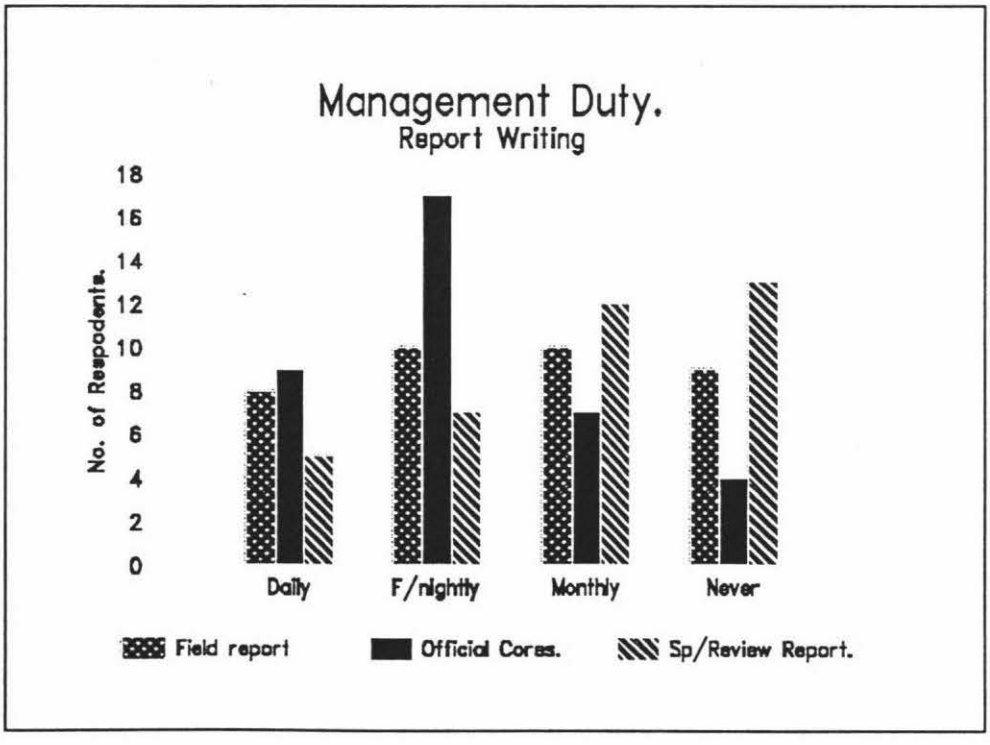
The next task asked under report writing concerned special review reports. While this may refer to a number of different kinds of reports, it was the intention of this study to find out how much time was spent on special reports being produced as either a progressive report or as an annual review report on major rural projects. Responses showed that 14% of the respondents were producing this kind of report daily, 19% claimed to have performed this duty

between once a week to once a fortnight. Some 32% of them said they were doing this type of report monthly. The remaining 35% indicated that they did not write project reports.

In summary 20% of the respondents were either writing reports or official correspondence daily, while 31% indicated performing some report duties on a fortnightly basis. Still others, 26% of the respondents, indicated performing report duties irregularly on average about once a month.

Only 24% indicated negative report on performance of these duties. This was hard to believe. However, it was suspected that if no written reports were produced concerning their performance then it must have been done verbally. Apart from those already mentioned there was no major difference in responses observed between the RDTs and the RDOs. It seemed that most of the officers were involved in correspondence duties regardless of their seniority.

Figure: 4.2b. Report Writing



4.4.2.1.3 Supervision

The next question under management centred on officers who were involved in providing supervision to their subordinates and how much time they were spending on that supervision. They were given the following list of supervisory activities and asked to aportion the time

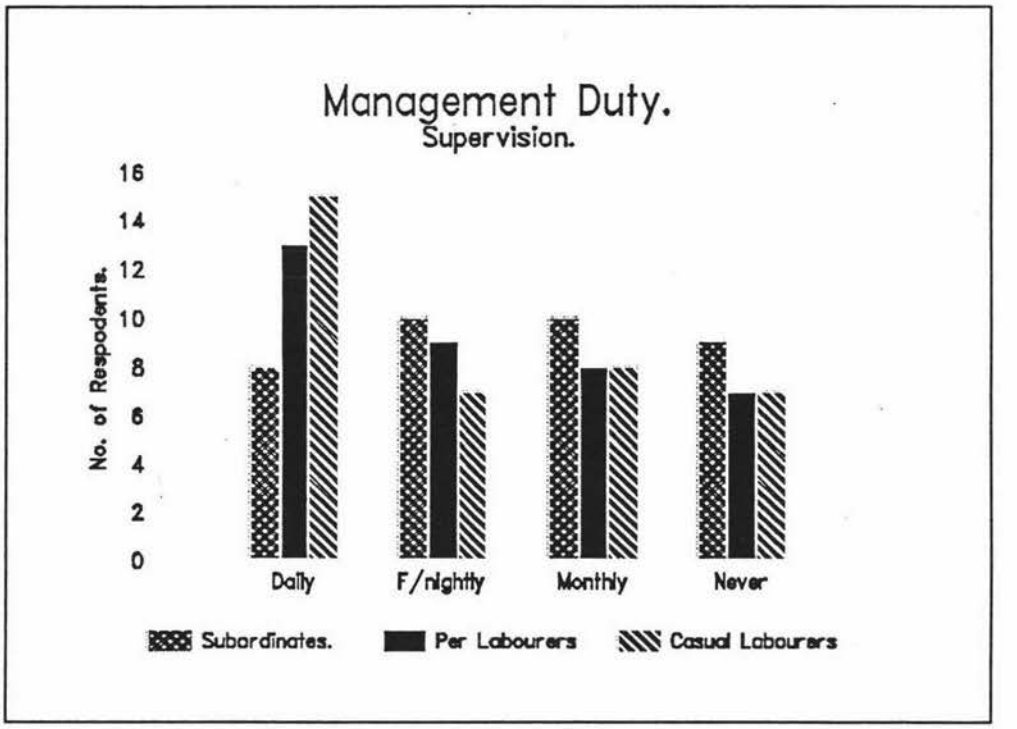
spent between the various activities;

-Supervision of subordinates

-Supervision of permanent labourers

-Supervision of casual labourers

Figure 4.3c Supervision Duties.



The survey showed that 22% of the respondents were providing daily supervision of their subordinates. Some 27% indicated providing supervision

between once a fortnight to once a month. Another 27% indicated providing supervision to subordinates less than once a month and 24% of the respondents reported non performance of this duty.

With regards to the supervision of permanent labourers, responses showed that 35% of officers were involved in supervising labourers on a daily basis, 24% indicated providing supervision of labourers about once a week to once a fortnight and 22% of the officers surveyed indicated doing this job once a month. Finally, 19% of the respondents reported that they were not involved with this task.

It seemed that many officers were involved with supervision of casual labourers more often than they were for permanent labourers. The survey showed that 41% were providing supervision to casual labourers on a daily basis. It was also observed that 19% indicated that supervision of casual labourers was done about once every fortnight. Some 21% the respondents indicated that supervision of casual labourers was done about once a month, while 19% were not involved with supervision of casual labourers. There were no major difference between RDTs and RDOs in their supervisory activities.

4.4.2.1.4 Project Planning (Prepare funding submission)

Preparing documents on projects for either commercial bank or for Government funding was assumed in this study to be part of an officer's management duties. Although an initial period during documentation would require data collection from the field. It was considered to be important to seek responses from respondents for the two different funding sources because the requirements of the actual documentation might be different. Also the aim of this study it was to identify which group of officers were involved in project planning.

Respondents were asked on their involvement in preparing project submissions for Government and/or commercial funding of:

_ Coffee projects
- Cocoa projects
- Coconut projects
- Oil palm projects
- Piggery projects
- Poultry projects
- Other projects

Responses showed that a small number of respondents,(5%) were involved in regular weekly or fortnightly preparation of documents for coffee projects for commercial funding. Some 5% indicated being involved in document preparation for commercial bank funding on a monthly basis, while 21% of the respondents indicated involvement of this task infrequently. The majority of respondents, about 68%, indicated that they did not perform this task at all.

Preparing documents for Cocoa projects requiring funding, showed a similar pattern of responses. About 5% of the respondents claimed to have performed this job on a daily basis, while another 5% indicated doing the particular task at monthly intervals. And 21% said they did this job on an irregular basis. As with coffee, 68% of respondents indicated that this was not one of their duties.

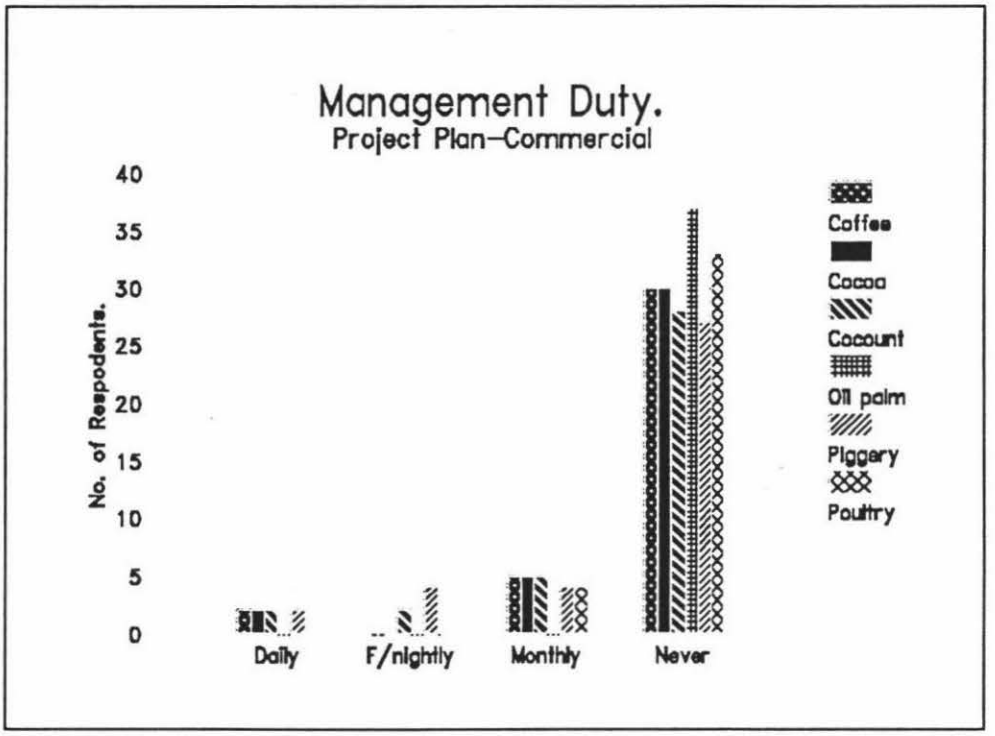
With regards to documentation on coconut projects a 5% response was observed for each of daily, once a fortnight, and once a month. Some 29% of responses were observed for performance of this duty at over monthly intervals while the majority of respondents, about 54%, were not involved in this task. For oil palm, all 37 respodents indicated non-involvement in any oil palm duty. This observation was not supprising because oil palm projects are confined to areas of the country that this study did not visit.

Responses observed for preparing piggery project plans for Comercial funding showed that 5% of the respondents were involved in doing this task on a daily basis, 11% indicated performing this task on fortnight basis, 5% performed this task once a month. Some 18% indicated performing this task at intervals of

more than a month, while 62% of respondents did not perform this duty. Responses observed for poultry projects showed that 24% of respondents were involved in preparing project documents for commercial funding. For the reminder the responses were similar to piggery discussed in this section.

In summary the majority of the respondents were not involved with preparing project documents for commercial bank funding. Those who were involved were very senior people, most being district rural development officers (DRDO) or acting in that capacity.

Figure: 4.4d. Project Planning for Commercial Funding.



The results observed for projects for Government funding were similar in pattern. Responses observed for coffee showed that 5% of the respondents were performing this duty as one of their daily duties. Another 5% claimed to have

performed this task about once a month, while 65% of respondents indicated not doing this task at all.

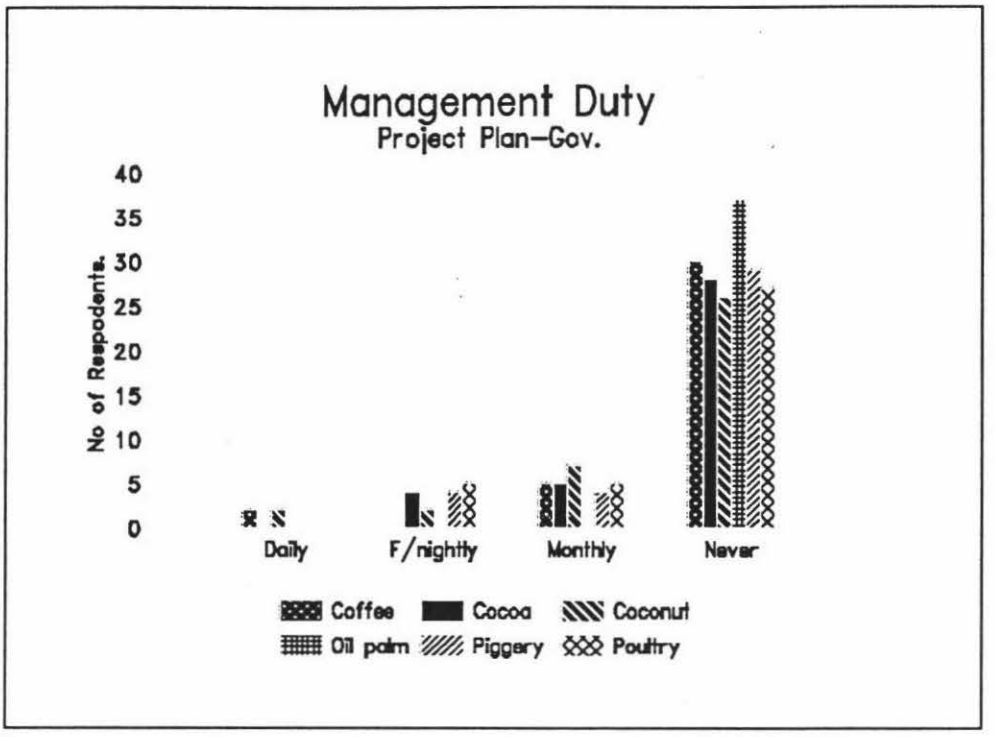
For cocoa, 5% each indicated performing once a week and once a fortnight, while 13% performed this duty once a month or less frequently than once a month. The majority, 62% responded not doing this job at all.

For coconut, again, a small number of respondents, (5%) reported performing this duty on daily basis. The results observed for the other intervals are as follows, a 5%, 8% & 21% for once a fortnight, once a month and less than once a month, respectively, while 59% of the respondents were not involved.

Preparing documents for piggery projects had a 5% response for each of the following intervals, once a week, once a fortnight and less than once a month. The only exception was on a monthly basis which had a 13% response. Again 62% of the respondents indicated non involvement of this duty.

A similar results were observed for poultry projects. A 5% response was observed for once a week and once a month, while a 8% and 21% response were observed for once a fortnight and less than once a month, respectively. Again a 59% of respondents indicated they were not involved.

Figure 4.5e. Project Planning for Government Funding.



4.4.2.2.1 General Extension duties.

General extension duties, formed the other part of section B. The questions asked were very general technical extension advisory duties for crops and livestock. The survey sought responses from the respondents on the extent of advisory services to farmers in the fields of poultry, piggery perennial crops, vegtables and food crops.

4.4.2.2.2 Livestock extension

For livestock advisory duties the following activities were listed:

Advise poultry and piggery farmers on;

-Feed management

-Husbandry management

-Disease & medication
-Marketing
-Gross margins
-Budgeting for projects
-General visits

Responses indicated that advisory duties with poultry projects were frequent. Poultry is one of the popular projects because of the success rate achieved by small farmers over the years. The response showed that 40% of the respondents were involved in providing advice on feed management to their client farmers on a weekly to once a fortnight basis. Another 29% indicated providing this type of advice about once a month or less than once a month.

Responses for husbandry management showed that a small number of respondents, 5% indicated performing this task daily, while 35% reported that husbandry advise was provided on a weekly to fortnightly basis. With regards to disease and medication advice on poultry projects, a frequency of 40% was reported for fortnightly to monthly. Some 18% indicated that they were performing this task irregularly, while about 40% indicated that they did not perform this task.

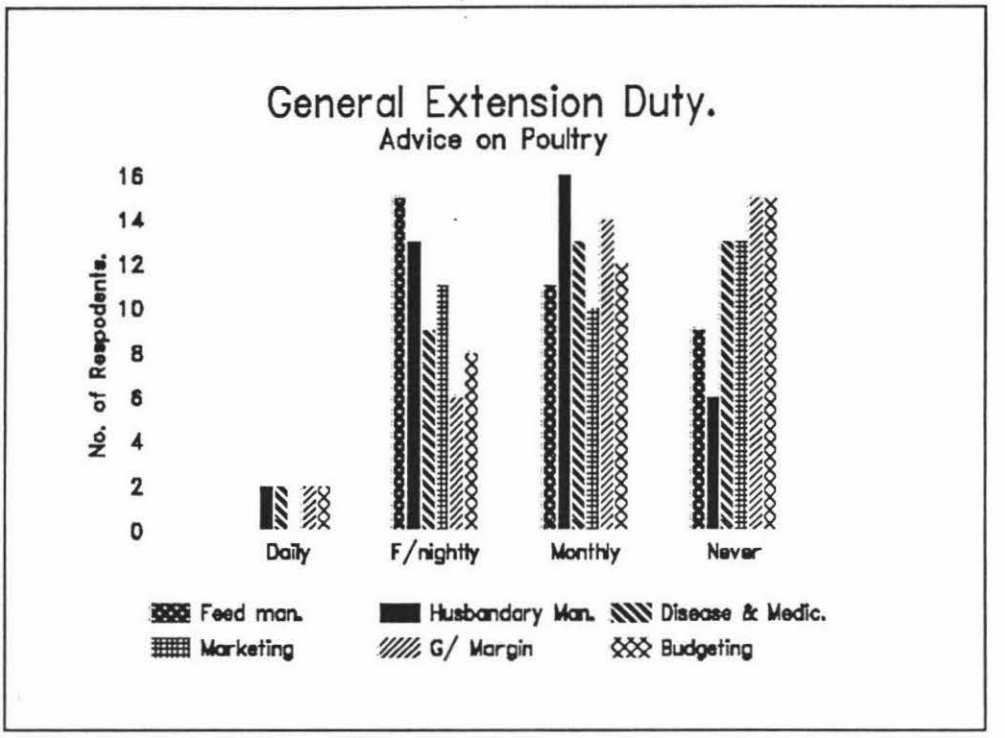
As for the advice on marketing, 30% of the respondents indicated that this duty was performed on a weekly to fortnightly basis. Another 27% performed this task on a monthly to less than a monthly, while 35% of the respondents were not performing this task.

A slightly lower response was seen with the duty of advising or actualy assisting farmers to work out poultry budgets and gross margins. For gross margin, 16% performed fortnightly and 37% monthly to less than once a month while, 40% of the respondents indicated non-involvement in this duty. For budgeting, 21% were observed for weekly to fortnightly, while 32% were observed for monthly to less than once a month. Here again, 40% of the

respondents indicated non-participation in this activity.

Some 35% of respondents were carrying out general visits at a weekly to fortnightly intervals, while 48% indicated for monthly to less than once a month visits.

Figure 4.6f. Advice on Poultry.



A slightly different pattern of results was observed for various advisory activities with piggery projects. For feed management, 40% response was observed for fortnightly to monthly, while 21% response was observed for less than monthly. Some 37% of respondents indicated that they were not involved. Similar responses were observed with husbandry advice with 40% of the respondents indicating performance of this task on a fortnightly to monthly basis, while 32% of respondents indicated performance of this task on an

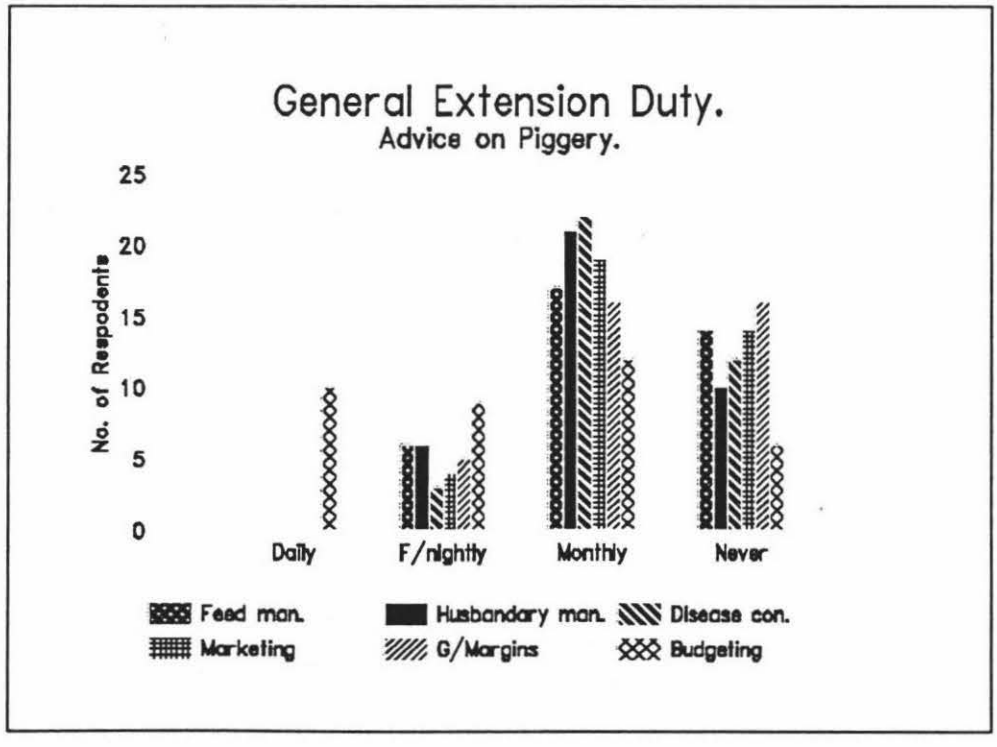
irregular basis, 27% of the respondents were not performing this task.

Some 29% of respondents were involved in providing advice on disease control fortnightly to monthly, while 37% of respondents indicated having performed this task irregularly or less than monthly, and 32% of respondents indicated as not performing this duty.

Some 27% and 35% of the respondents indicated that they were providing advice on marketing of pigs on a fortnightly and monthly basis, respectively, while 37% of the respondents indicated that this was not part of their duties. With respect to advice on gross margins 29% indicated performing this duty fortnightly while 27% on a monthly to more than monthly basis.

For piggery budgeting, unlike that for the poultry, there was a 27% response for daily, while 40% response was observed for fortnightly to monthly. Some 18% respondents indicated non performance of this task. Only a small number of respondents indicated performing weekly.

Figure 4.7g. Advice on Piggery.



4.4.2.2.3 Advice on perennial/cash crops

The perennial/cash crops of the tropics are usualy coffee, coconut, cocoa and oil palm and these are mainly major export crops. The following were listed under this heading:

Providing advice on Coffee, coconut, cocoa & oil palm;

-Disease control

-Marketing

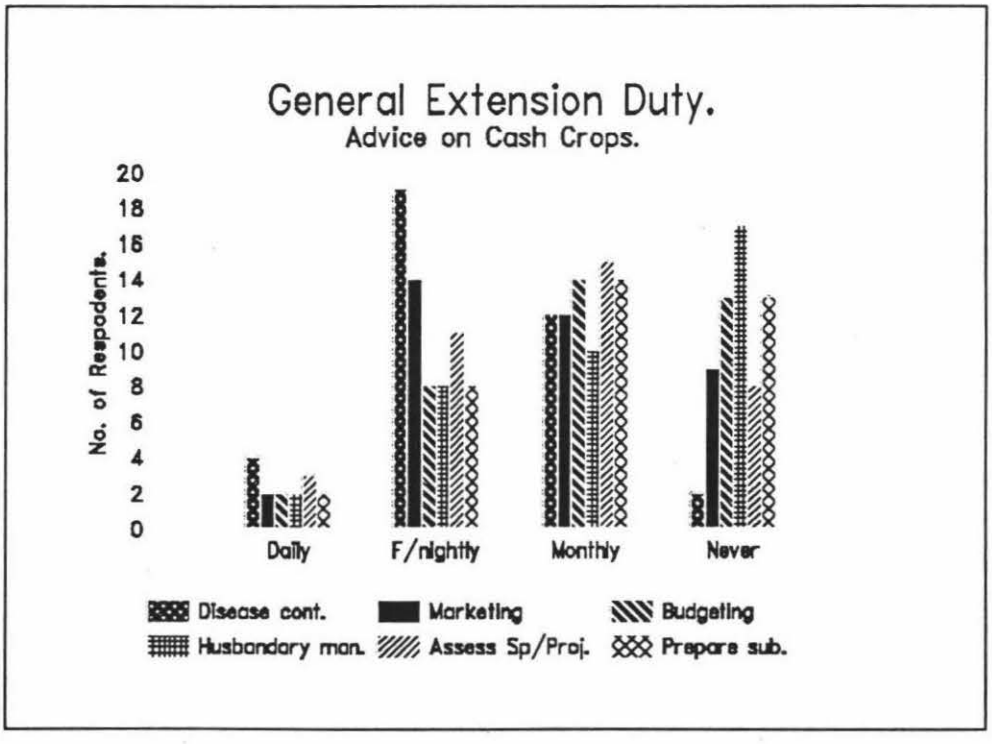
-Budgeting

-Husbandry management

-Visit & assess special projects

-Preparing project submissions for funding

Figure 4.8h. Advice on Cash Crops.



Some 18% of respondents indicated performing advice on disease control on a daily to weekly basis. Some 43% of respondents indicated performing this duty fortnightly, while 32% indicated performing this duty on a monthly or less than monthly basis.

Some 18% of respondents indicated advising on marketing on a daily to weekly basis, 43% respondents indicated performing this duty fortnightly to monthly, and only 13% of respondents indicated performance more than monthly basis.

Advice on husbandry practice received a 27% response for weekly, and monthly while 32% indicated that this activity did not form part of their duties.

Visiting and assessing special projects responses showed that only 5% were doing this daily ,while 29% were doing it fortnightly, and 40% indicated performing this task at monthly or greater than monthly intervals. Some 18% of respondents did not perform this task at all.

The next task on the list was preparing project submissions for bank funding. The responses observed for this were as follows; Only 5% indicated for daily performance, while a bigger group, representing 35% of respondents indicated fortnightly to monthly performance, and 35% reported non-performance of this task.

4.4.2.2.4 Advise on Vegetables.

Under this heading the following tasks were listed;

-Disease control measures

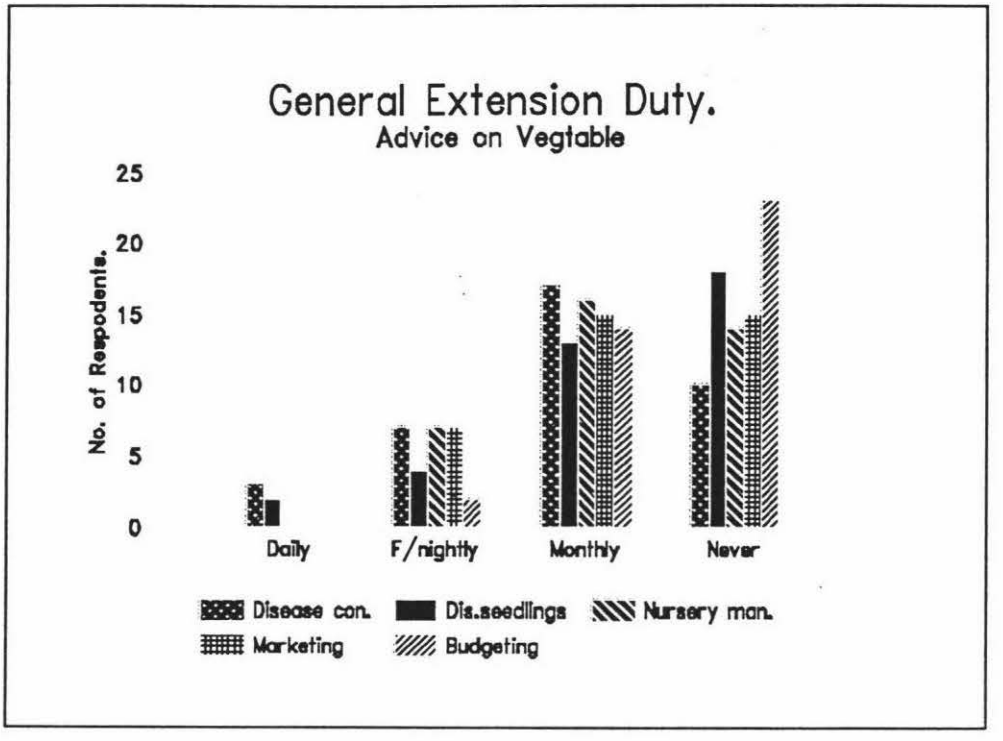
-Distribution of seedlings

-Advising on nursery management

-Marketing

-Budgeting

Fiure 4.9i. Advice on Vegetable.



Responses indicated that of all the activities listed under food crops advice on disease control was the only duty that was regularly performed daily (see fig.4.9i)

The responses indicated 13% performance on a daily to weekly basis, while 35% indicated performance on fortnightly to monthly basis ,and 24% indicated that this duty was performed at irregular intervals or not

at all.

For distribution of seedlings, the following responses were noted; 5% was indicated for each of daily, fortnightly, monthly, while 29% response was observed for more than monthly. Those who claimed not to have performed this duty represented about 48% of respondents.

For advice on nursery management 27% of respondents were performing this duty at between fortnightly to monthly intervals, while 29% of respondents indicated performance of this duty more than monthly and 37% of respondents indicated non-performance of this duty.

Responses on advising farmers on the marketing aspect of their food crops showed that 37% of the respondents were providing this advice at monthly intervals, while a further 21% indicated more than monthly, and 40%, indicated that this task had never been performed by them. Either providing advice on budgeting or assisting farmers with their actual budgeting received a very low response. Only 11% showed that this task was performed on a monthly basis, while 32% of respondents indicated performing it less than once a month. A bigger proportion of respondents indicated not performing this task.

While there was no clear cut evidence to suggest any major differences in the response observed between the RDTs and RDOs, there was one small difference. A higher frequency of RDTs response was observed at monthly compared to RDOs whose frequency was observed to be higher on a weekly and fortnightly basis.

4.4.2.2.5 Food crops.

Under food crop, advisory duties listed were;

Disease control

Distribution of planting material

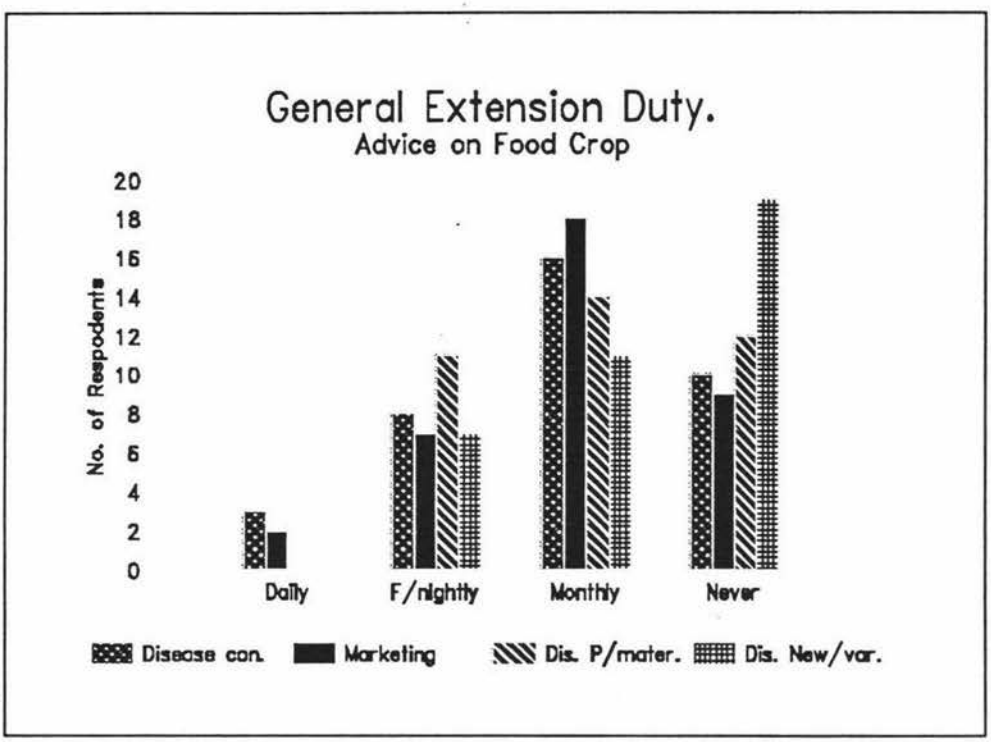
Marketing

Distributuion of new varieties.

For disease control 7% of the respondent indicated performing this duty daily while 22% indicated performing fortnightly and 43% indicated performing monthly. The remaining indicated non perfomance of this duty. The marketing duty had almost a similar responses to disease control with 5% daily, 19% fortnightly and 49% monthly while the remaining 24% indicated non performance of this duty.

No respodents indicated performing distribution of planting material on a daily basis, while 30% indicated performing fortnightly and 38% on a monthly basis. A similar daily response was observed for distribution of new varieties with 19 % performing fortnightly and 30% monthly while the majority (51%) indicating non performance.

Figure 4.10j: Food crops Duties.



4.4.3 Part C of the questionnaire.

4.4.3.1 Introduction

The activities contained in this part of the questionnaire, consisted mainly of course topics or contents of the present P.C.D. course offered at H.A.C. The responses to this section were sought from the Post Certificate Diploma graduates of the current program. This section was intended to seek out the opinion of the current graduates on their experiences in the field relative to the

PCD course curriculum. An overwhelming response was observed for all courses as being useful.

4.4.3.2 Management Courses.

The course contents listed under management were the following;

-Record keeping
-Report writing
-Problem solving
-Project planning
-Budgeting and gross margins
-Feasibility studies
-Financial records

Respodents to the survey were asked to rate each of these contents as either very useful, useful, fairly useful or not useful.

The current record keeping course provided by the PCD curriculum seemed to be very useful to the responding officers, with 75% of the respondents indicating that the course was very useful. Only a small number of the respondents, representing about 25% indicated that the course was useful. No respondents indicated that record keeping course as not being found useful.

Report writing received much the same response. Again most people (60%) indicated that the course was very useful to them in their daily duties. Fewer (40%) indicated it as useful.

The responses for problem solving were slightly different from other management course topics. About 50% of the respondents found the course to be very useful while the other half found problem solving as useful.

Project planning received a rating by 75% as being very useful and 25% as being fairly useful. For budgeting and gross margins the ratings were 60% as being very useful, while 40% as being useful to fairly useful. Reporting writing was given a similar rating to project planning.

Feasibility studies ratings were 50% as being very useful, while 50% rated

them as being fairly useful. Finally, financial records received a rating of 60% as being very useful, while 40% as being useful.

4.4.3.3 Livestock courses

In the current PCD programme a number of livestock courses are offered. The emphasis on livestock courses is supposed to be more management oriented than just the technical aspects of livestock husbandry. As such the following courses are offered;

-Poultry management course
-Piggery management course
-Sheep management course
-Cattle management course
-Animal disease and control

One would expect that some of those courses, such as poultry and piggery management and animal disease control would prove to be very useful because of their popularity in the village livestock projects. It was expected that such courses would receive an overwhelming response of being very useful, however as it turned out, only about 50% of the respondents indicated as being very useful. The other half indicated them as either being useful or fairly useful.
For poultry management respondents rated 50% as being very useful while the other half rated as being useful to fairly usful.
Responses observed for the piggery management course were at the expected level. Piggery projects were very popular and in high demanded until the beginning of the last decade. Since then the popularity of piggery projects has dropped because of the high costs of production and a lack of organised markets. Responses indicated that 50% of the of the graduates found piggery management course to be very useful while the other half (50%) found it to be useful or fairly useful.

The sheep management course received a 30% rating as being very useful while another 30% rated as being useful or fairly useful. The last 40% rated the course as not being useful at all. Sheep were only introduced in the last fifteen

years to PNG and farming is confined to higher alltitudes. Therefore the response observed was considered reasonable.

The responses observed for cattle management was seen by the author to be in line with the apparent decline in cattle farming in PNG. About 50% of the respondents indicated the cattle management course as being very useful while the other half indicated it as being only fairly useful.
With the animal disease course, some 50% of the respondents indicated the course as being useful while the others indicated it as being only fairly useful.

4.4.3.4 Agricultural courses.
The following crops courses are included in the current PCD course;

-Land management
-Post harvest
-Perennial crops
-Vegetables production

The responses showed that the most useful courses offered by the crops section were land management and post harvest. Some 50% of the respondents indicated that both the land management and the post harvest were very useful while the other half indicated it as being useful to fairly useful.

For the perennial crops courses, 40% of the respodents indicated the course as being very useful to them in their work, while the other half of the respondents indicated it as not being useful.

For the vegetables course, a small number indicated it as being very useful, while most of them indicated it as useful to fairly useful. Only 25% of the respondents indicated it as not being useful at all. These responses are no surprise to the author since the sample of respondents was biassed against vegetable production because few were required to advise on it.

4.4.3.5 Project work

The last part of this section of the questionnaire contained questions on project work (practical) that students have to do as part of the package for the PCD qualification. This included a students'own project work and a vegetables project. Both of these projects involve physical work on an allocated plot of land. The response observed for the students'own project was about 65% indicating it as being very useful, while the remainder indicated as being only useful. For the vegetables project, only a small percentage of the respondents indicated it as being very useful, while the majority found it to be fairly useful. While, these responses probably reflect the real situation in the field, because of the biassed sampling of the population, the intent of vegetable project has been missed by the respondents. The purpose of the vegetables project is to provide an opportunity to intergrate and apply in practice farm management principles. Respodents, however, appear to regard it as just another vegetable production course.

4.4.3.6 Summary of Part C results.

Table 4.5a: part C Results.

Topics in Farm Management	5	4	3	2	1
Records keeping	14	3	3	0	0
Report Writing	12	3	2	2	1
Problem solving	10	5	4	1	0
Project planing	14	0	5	1	0
Budgeting /Gross margin	12	3	2	3	0
Feasibility study	11	2	7	0	0
Finacial records	12	0	6	2	0
Total	85	20	32	12	2
Average Percent	60%	14%	22%	8%	1%
Topics in Livestock courses					
Poultry management	11	4	4	1	0
Piggery management	10	2	8	0	0

Sheep management	6	2	2	2	8
Cattle management	11	0	0	0	9
Animal Disease and control	11	0	1	4	4
Total	49	8	15	7	21
Average Percent	49%	8%	15%	7%	21%

Topics in Crops courses					
Land management	11	4	2	2	1
Post harvest	10	2	8	0	0
Perenial crops	8	4	6	2	0
Vegtable production	2	4	4	6	4
Total	31	14	20	10	5
Average Percent	37%	17%	24%	12%	6%

Project Work					
Option project work	12	4	0	4	0
Students vegetable project	2	4	6	5	3
Total	14	8	6	9	3
Average Percent	35%	20%	15%	23%	8%

Explanation of caculation of average percent.

1. Add up tally for course topics under each heading.
2. Divided the total figure by No of course topics.
3. The answer for No 2 is divided by 20 (No. of respodents) and then multiplied by 100 to express in percentage.
4. For example, under Project work, 35% represents on avarage how very useful those two course are.
5. Caculations for Project work;

   14/2 = 7

   7/20 x 100 = 35%.

4.4.3.7 Part C-General comments on current PCD course.

This section of the questionnaire was provided to seek general comments from graduates of the current PDC training. There were no speific questions asked and respondents were at liberty to provide comments on any aspect concerning the PCD programme. Of all the comments made, two stood out very clearly.

4.4.3.7a. Rural Engineering presently included as part of the PCD programme was considered by an overwhelming number of respondents to be very wasteful of their time and effort because the knowledge gained has not been utilised, due to lack of engagement in any engineering type of activities in their present job. On a number of occasion, in the past, students have openly voiced their disapproval of the inclusion of rural engineering in the PCD programme and chose this opportunity to repeat their disapproval of the course.

4.4.3.7b. Almost half of the respondents thought the current PCD course should include as much as possible of the curriculum content of the final year in the current three year diploma course.

4.4.4 Part D- Provision for comments.

The last section of the questionnaire provided for general comments on the course content and general extension problems that confronted practising extension workers. The respondents provided the following responses in the order of the importance as perceived by them. They appear in table 4.4c below, in the order of the weighting of the importance given by the respondents. They indicated their first preference for the inclusion of Project Planning as most important to the PCD program. This was also evident from the few personal interviews the author was able to conduct with some individuals. A lack of knowledge and experience to provide good, comprehensive, integrated rural project plans for their district was reported by most of the RDOs but particularly by the DRDOs. They complained of having to 'fumble around' for information on how to go about providing good plans that later proved to be worthy of consideration.

The second most popular comment was for the inclusion of more on report writing. This comment may well be related to the first point. Being able to provide good plans requires a good ,accurate description (report) of a situation's, problems or opportunities and their solution.

Poultry management and land management were considered by respodents to be the next most important courses. The remaining courses were reported to be of less importance as can be observed from table (4.4c), below.

Table 4.4c: Order of importance as percieved by respodents.

Topics	Tally	Percent
Project planning	24	65%
Report writing	18	48%
Poultry management	16	43%
Land management	15	40%
Records keeping	8	21%
Perennial crops	8	21%
Animal disease control	6	16%
Vegetables production	6	16%
Cattle management	6	16%
Post harvest	4	11%
Problem solving	4	11%
Meat inspection	3	8%
Plant disease.	3	8%

CHAPTER 5: DISCUSSION OF RESULTS.

5.1 Introduction

The major purpose of this study was to establish whether the present PCD course curriculum and in particular the content and level of management courses contained vocationally suitable items for potential RDOs.
To collect necessary data, a comparative curricula study and a survey questionnaire was undertaken.

For the curricula comparison it was assumed that;

-A course topic found to be common to all curricula would suggest it's suitability,

-while rare course topics identified only with the HAC curriculum could questioned as possibly unsuitable.

It was hoped that the survey questionnaire would identify suitable courses whether or not they were contained in the current HAC PCD curriculum. This was to be done by establishing the following from the results of the survey;
Firstly, by identifying the most frequently performed duties. This would identify important duties from less important ones. Secondly, identify who performs these duties more frequently, either RDTs or RDOs. Such results were to be used to classify various extension duties relative to each officer's level in the organisation.

Finally, graduates were asked to suggest needed courses from their work experiences for inclusion in the PCD programme. This provided an opportunity for identifying new courses as well as evaluating the currant PCD curriculum.

5.2 Curricula study.

The curricula comparison yielded three important results;

5.2a. The Project Planning and Management Course offered in the present HAC curriculum was the only course that is not offered by

other similar institutions.

5.2b. The Fiji Agricultural College was the only other college offering a report writing course.

5.2c. Apart from these two, other course topics offered by HAC were also offered by most of the other institutions.

5.2.1 Implications of curricula comparison results.

A number of implications can be derived from these results.

5.2.1a. One implication is that the present Project Planning and Management Course offered by HAC may not be an appropriate course for the PDC training programme. This study could consider recommending that this particular course be excluded from the present PCD course programme, especially if results from the survey questionnaire also indicated that it was inappropriate.

However, the current HAC PCD students are experienced extension workers and already hold a certificate in topical agriculture. Because of their existing technical knowledge and experience at intake they may only require additional knowledge and skills in project planning and management to become better and more effective officers and/or to be eligible for promotion to RDOs.

Results from part B of the questionnaire indicated ambiguity with the appropriateness of or otherwise of the Project Planning and Management Course.

Results from part C of the questionnaire indicated that 64% of the respondents wanted to see an expanded Project Planning and Management course included in the PCD course.

5.2.1b. Because Fiji College of Agriculture is the only other college offering a report writing course and because of its similar environment to HAC, two implications can be derived from this result;

Firstly, it could be implied that a report writing course is essential in developing countries where the English is the second language.

It could also be argued that because other institutions do not offer report

writing, it may not be an appropriate course for the PCD. However, results from the questionnaire indicated that report writing is an important activity for both the RDTs and the RDOs. In fact report writing was found to be the next most frequently performed duty after supervision.

Curricula comparison indicated that most other management courses offered by HAC in the PCD are also contained in the curricula of the other institutions studied.

5.3 Consultant Assumption of Training.

The Mackillop consultant found that additional training was needed by RDTs to equip them with the knowledge and skills they needed to effectively perform at RDO level. However, what the consultancy was not able to indicate was that what courses could be regarded as suitable for the PCD course.

It seems logical to assume that more management courses were needed since most technical courses appear to have been well covered in the certificate programme. It also seems logical to assume that RDOs would be much more involved in management responsibilities than RDTs and so there was a need for the PCD course to be much more management oriented. Making such assumption is easy but identifying suitable course content without adequate information about RDO's-on-the-job- situation could prove to be very difficult. Thus it was thought to be sensible to start with an examination of common extension duties of RDTs and of RDOs and see how frequently these duties are performed by members of each group.

5.4 Survey Questionnaire

The survey questionnaire was divided into four parts, A,B,C,& D. Implications arising from the results of the questionnaire will be discussed in that order.

The aim of part A was to identify three aspects;

-The qualification of each respondent

-The rank and position in the organisation held by each respondent in the organisation. This also meant identifying whether an officer was a general extension worker, a specialist or a manager.

The results obtained in parts B, C and D were to be analyzed in conjunction with the results of part A to make important distinctions between, and identification of, tasks relative to the position and qualification of respondents. As reported earlier, the study was able to identify the qualification (Diploma or Certificate) of each respondent, a general idea of their rank in the organisation and management positions. However, the study did not identify those holding specialist positions.

It was found that RDOs were regularly performing most of the general extension and management tasks listed in part B of the questionnaire, while only a few management tasks were performed regularly by RDTs. Tasks that were regularly performed by RDTs included produce buying, collecting and receipting public money and buying supplies and materials using ILPOC.
This result was unexpected. Normally the author would have expected that RDTs would be involved more frequently with performing general agricultural extension duties than RDOs.

Since the main concern for this study is to identify needed management courses, management duties were separated from the others as follows;
- duties that could be clearly identified as management
- and the remainder which were regarded as general extension duties.

5.4.1 Management duties

Duties that were thought by the author to be more management oriented were; activities pertaining to finance; supervision of subordinates and labourers; the general communication link between the officers and their superiors or headquarters; preparation and documentation of viable project plans for their areas.

5.4.1.1 Discussion of management duties results.

The results observed under management duties were:

5.4.1.1a. Of the management duties outlined above, those most frequently

performed were supervision and report writing.

5.4.1.1b. RDOs were performing most management duties more frequently than RDTs. However, a few activities were frequently performed by RDTs. They included collecting and receipting public money, purchasing material using ILPOC and buying produce.

5.4.1.1c. Significant differences were observed with project planning. The few respondents who indicated performing project planning duties were mainly senior officers. In fact most of them were diplomates and were acting district rural development officers (ADRDOs). The current PCD programme may not contain adequate level of management to bridge RDTs into DRDOs duties.

5.4.1.2 Supervision

Supervision, though it was the most frequently performed task, was not necessarily the daily task that took most of an officers' time (a fact learnt from the personal interviews the author was able to conduct with some respondents). The author formed the impression that amount of time extension workers spent on supervision of labourers was minimal compared to time spent on report writing, and therefore, advanced training in report writing and/or general communication with H/Q or their immediate supervisors, would be likely to improve performance more than training in supervision.

5.4.1.3 Report writing

Report writing, as mentioned above, was found to be a frequently performed and time consuming duty. Under curriculum comparison it was noted that a report writing course was only offered by HAC and FCA. The results from part B of the questionnaire confirmed that report writing is performed frequently by most extension workers regardless of seniority and position. The finding is further confirmed by the results from part C of the questionnaire where 64% of respondents rated the HAC report writing course as being very useful. The support for the report writing course is also evident from part D where the next

most preferred course after project planning and management for review and expansion is report writing.

5.4.1.4 Project planning and management.

Several questions on project planning were asked in part B. Two of these questions were on planning for cash crops. The only difference between the two was with respect to the source of funds, one was for commercial funding while the other for Government funding.

The results from part C indicated that most respondents found the PCD project planning and management module to be very useful, even though it was not a full scale project planning and management course.

The results from part D gave overwhelming support for an expanded project planning and management course to be included as part of the PDC programme.

5.4.1.4.1 Scale of project planning.

5.3.1.4.1a. Major development projects sponsored by Government through the National Project Plan (NPP) and/or big loans from international agencies would require a team of experts and/or agency consultants to carry out the actual planning. Input to this planning would probably require some contribution from local extension officers. However they would not be required to part take in the formulation of the actual proposal for the project.

5.4.1.4.1b. Projects that are to be sponsored through Government expenditure often require the initial planning to originate from a provincial or district centre. If so, then the initial input data required for the plan would have to come from local extension officers who would be more familiar with the actual situation in the field than their superiors.

5.4.1.4.1c. The last type of project plan that one might expect to observe in the field would be the planning of projects for recurrent expenditure, e.g. small scale integrated rural projects.

5.4.1.4.1d. In the case of commercial ventures it would be expected that the planning would be based on individual projects and the quality of document preparation for presentation to commercial banks would have to be top rate.

5.4.1.4.2 Expected amount of involvement.

5.3.1.5a. As discussed above, major projects, particularly international aid projects would require little involvement from junior officers. However, some input data and discussion of the field situation would come from those in charge of rural posts. At a provincial level specialist officers might be involved in the initial stage of project formulation but not be involved in the final documentation of the project. The only person that is likely to be involved in such high level project planning would be the Provincial Assistant Secretary for the Department of Agriculture and Livestock. He would be the only person that might be expected to join a team of consultants or experts from national H/Q.

5.4.1.4.2b. Major projects that are planned for the Government expenditure under (NPP) would expect input from everybody concerned. Extension officers would be the right people to submit the raw input data needed for the plan. The initial plan would be formulated by the District Rural Development Officer incharge. This plan would then be passed on to provincial H/Q. The final plan would then be compiled by the Assistant Secretary and Provincial Specialists.

5.4.1.4.2c. Planning and budgeting for an increased allocation in a district's recurrent budget expenditure should be the concern of everyone in the district. Budget expenditure estimates would have to come from even the lowest ranked officers in order to account for all possible expenses. The final plan for a district would be a collective effort of everyone concerned.

5.4.1.4.2d. Finally, assisting individual farmers in their efforts to secure loans for their projects from commercial banks would certainly require initial planning to come from the extension person directly involved with the project. This plan would then be revised or improved by the officer in charge at a local post or by a provincial specialist before it is finally presented for a loan.

5.4.1.5 Summary

From the above discussion it is concluded that there are two types of project planning in question:

5.4.1.5a. Training in development project planning would not be immediately relevant to RDOs, but the knowledge acquired would still be useful for other types of project plan they might be involved in and, certainly would become useful as they progressed to more senior posts latter on.

5.4.1.5b. The type of project planning done for NPP or increased allocation of recurrent budget expenditure would be very relevant to all RDOs.

5.4.1.5c. Project plans for commercial loans would be similar to that for NPP but knowledge of and skills with the required procedure of the bank would also be very relevant to all RDOs.

If these conclusions are correct then it seems reasonable to suggest that project planning content contained in the present PDC curriculum should be revised and expanded considerably. The other aspect that needs to be considered here is that, while the knowledge of project planning gained from such course may not be immediately relevant to RDOs, an understanding of the concepts and the underlying principles might broaden the management horizon of individuals.

5.4.1.6 Financial duties.

Most activities listed under this heading were specific duties involved with the use and control of money and generally results show very few differences. Duties that did show some differences in performance between RDTs and

RDOs were;

-paying of labourers.

-purchasing supplies and materials using ILPOCs

-receipting and collecting public funds

-produce buying

Those RDTs paying labourers were very senior RDTs, either acting as RDOs or holding senior RDTs substantive level 3 and 4 positions.

For the procurement of supplies and materials it was observed that a small number of RDTs were actually involved with purchasing items from Government stores. This observation was reasonable because the accounting procedure requires stricter control than purchase from other sources of supplies. This means that responsibility will have to be with people in management. On the other hand purchasing material from sources other than Government Store was observed to be performed by RDTs more than RDOs.

The other interesting result was with the collecting and receipting of public funds. Officially, this duty should be only performed by senior officers, however, results in this study indicated that there were just as many RDTs as RDOs performing this duty. It is assumed that this particular duty has perhaps been delegated to junior officers rather than taking the time of someone in a management position.

The overall results under finance showed that this was an area of frequent activity with an overall performance of 70%, while non performance represented about 30%. The impression one gets from this section is that the control of finance rests with management while routine financial duties are shared with others officers.

5.5 General Extension Duties.

5.5.1 Crops Extension duty

The questions posed in the questionnaire for crops extension activities were very general in nature and they yielded only general responses.

In line with the aim of this study, this section on technical extension duties will not be discussed in as much detail as was management duties because, firstly, the curricula comparison did not include detailed technical course content and secondly, while it was hoped to identify specialist extension workers responses to the questionnaire failed to do so.

In the crops section of part B, the most frequently performed technical extension activities were with cash crops. Although the results indicated that more RDOs were providing cash crop extension advice more frequently than the RDTs, overall it was found to be the most frequently performed activity. The next most frequent activity identified by this study was with food crops where 22% of respondents were performing this activity weekly.

The results obtained in part B on technical extension activities could not be related to the curricula comparison because the curricula comparison did not include detailed technical course content.

5.5.1.1 Cash crops

The author believed that most general cash crop extension effort would have been directed at disease control. For instance, with coffee, he suspected that most extension effort would be directed at minimizing coffee rust, as has been the case since 1983. For cocoa, more extension effort would be directed at controlling black pod disease than anything else. Respondents who identified positively with this activity were expected by the author to be specialist rather than general extensionists. However, this expectation could not be verified because relevant information was not gathered in part A of the questionnaire. For some unknown reason cash crop disease control activity was performed more frequently by RDOs than RDTs. Most RDOs (80%) indicated performing this duty frequently.

A similar pattern was observed for marketing and general visits. The result for marketing showed that 60% of RDOs indicated doing this task fortnightly and

for general visits 43% of RDOs indicated performance of this activity fortnightly.

Responses observed for other cash crop activities were similar with the exception for husbandry management advice. Budgeting advice or budgeting for farmers, assessing special projects, and preparing documents for either commercial bank or Government funding under NPP had similar responses for RDOs and RDTs. The responses pertaining to preparing documents for funding revealed a similar trend to that of Project planning activities. That is, more RDOs were involved in this activity than the RDTs.

One possible explanation of more RDOs performing cash crop extension duties may be because of efforts in the last decade were directed at motivating farmers to sustain productivity in the face of falling world commodity prices for all cash crops. Loan incentives were provided by Government to rehabilitate old gardens and, because of this, special extension efforts were required and so more RDOs were involved than RDTs.

5.5.1.2 Food Crops

Government concern to increase food production has become an increasingly important issue in the last couple of decades. Firstly, to sustain adequate food production for a rapidly growing population and secondly, to encourage and promote the production of nutritionally improved food crops in remote areas and as a measure to reduce food import dependency by the urban population. Given the importance of these reasons, the author had expected the survey to show a major investment of human resources directed at food crop extension efforts. However, there was no evidence of this in the frequency with which general food crop extension activities were performed by either RDOs or RDTs.

The only activity that seemed to have achieved a slightly higher pattern of response was with the distribution of planting materials. This activity had a response frequency of 30% for weekly to fortnightly performance, which was

higher than most other activities for food crops.

Again, a notable difference was observed between RDOs and RDTs. Those who were distributing planting materials on weekly or fortnightly basis, were mainly RDOs.

5.5.1.3 Vegetables

The results for vegetable advisory duties were similar to the results for other food crop extension activities. A higher rate of performance for most activities under vegetable advice was observed for monthly to less than monthly, rather than weekly to fortnightly.

The overall results under vegetable extension duties showed that some extension workers were providing some vegetable extension advice at sometime during the year. The overall performance of this duty was slightly higher (58%) than non performance (42%.

5.5.1.4 Summary.

The most intensive activity as identified by this study under crops, was cash crop extension work with an average daily performance of 7% and 34% for weekly to fortnightly.

The next most important crops activity identified was advice on food crop production with an average daily performance of 3%, while 22% was recorded for weekly to fortnightly. This was followed by vegetable production activities. The frequency of performance difference between RDOs and RDTs was notable with RDOs reporting a much higher frequency of performance.

5.5.2 Livestock

Although, there are a number of types of livestock farmed in PNG, only two of these were regarded by the author as being important and were included in this study. They were poultry and piggery enterprises. The main reason for including these two was because of the high success rate of village piggery and poultry projects over the years.

5.5.2.1 Piggery

Pigs have always been part of a village life in PNG even before colonisation. However, given pressure on land due to recent rapid population growth, it has become increasingly necessary to encourage villagers to change their style of husbandry from free range to a more confined piggery operation. This has called in turn for much higher level of husbandry and financial management from farmers than ever before.

The survey showed that most piggery extension activities were performed once a month. The only exception was with budgeting activity which had a 27% response as being performed daily.

5.5.2.2 Poultry

Poultry is probably the most popular village livestock project in PNG and many farmers produce good poultry products. Because of its popularity the author expected poultry extension work to show frequent performance of all activities. However, only some survey responses showed high frequencies of performance. This was evident with feed management, husbandry management and marketing with 40%, 35% and 29%, of respondents respectively, reporting performance on an overall basis.

5.5.2.3 Overall Summary

The overall rating for Livestock extension activities showed that poultry was the most frequently performed livestock activity with 29% of respondent advising on poultry and 13% advising on piggery projects on weekly basis.

5.6 Discussion of Part C Results.

Part C of the questionnaire contained lists of course topics which are currently offered in the PCD programme by various subject areas. Respondents were asked to rate these course topics according to their perception of how useful they have been to them in their work. Because the questions were based on the present PCD course, only graduates of the present PCD training programme could respond to this part of the questionnaire. Of all the respondents, 54%

were graduates of the current training programme.

5.6.1 Management course topics.

The overall results for management course topics indicated that they were very useful courses and most of them were rated as being very useful. Only a few were rated as useful to fairly useful, and none were rated as not useful. The only course topic under management that was not favourably rated as being very useful was the extension course. This may have been because extension and communication is well covered in the certificte course.

Project planning and feasibility studies were rated (70% and 55% respectively) as being very useful. Those management courses regarded as very useful in part C were also the most preferred courses in part D of the survey questionnaire. Report writing was rated by 60% of respondents to be very useful. It was also a highly preferred course by respondents in part D and was identified in part B as the most frequently performed activity by both RDOs and RDTs. These results also confirmed one of the author's assumptions that report writing is an important course for developing countries whose English is a second language. The overall response, showed an average rating of 60% (tab.4.5a) for each of the management courses and implies that management courses are perceived by extension to be most relevant to their day to day work.

5.6.2 Crops course topics

Some major differences were observed with crops course topics. Some courses were favoured as being very useful to the participants, while others as only useful, fairly useful or never. Variations were probably influenced by some of the following factors;

5.6.2a. National and Provincial aims and priorities for agricultural development of a province or a region.

5.6.2b. Respondents specialist duties.

5.6.2c. Variation of agricultural activities according to climate variation.

Responses to this section did not allow for some or all of these factors. For example, the perceived usefulness of the vegetable course may have been low because introduced vegetables are not grown throughout the country. Vegetable growing is determined by climatic factors and has nothing to do with national and provincial priorities or a management decisions. For these reasons, it would be premature to suggest that any courses that have a low rating are unsuitable for the PCD programme.

Crops course topics that were found to be very useful were land management and post harvest management. Land management was rated by 55% of respondents as being very useful and 50% of them rated post harvest management to be very useful.

5.6.2.1 Perennial Crops

Despite being favourably rated in part B as the most frequently performed extension activity, only 40% of respondents indicated the perennial crops course as very useful. The remaining 60% of respondents rated it only useful to fairly useful. It was assumed by the author that the difference in responses may be a reflection of a lack of new or additional knowledge and skills to provide challenge and sustain the interest of participants. In other words, the course was seen to have contained only revision of much of the certificate content and did not provide the additional knowledge and skills expected of it.

5.6.2.2 Vegetables

The only course that rated poorly in part C was vegetable production. This course was rated by 10% of the respondents to be very useful while 70% of them rated the course to be only useful to fairly useful and 20% rated it not useful. A similar rating of 10%, 75% and 15% for very useful to fairly useful and not useful, respectively was given to the practical vegetable course. The practical vegetable production course is intended to demonstrate management principles more than vegetable production as such. However, because the majority of respondents were from non vegetable growing regions this aim was

disregarded and the course was rated as not very useful.

5.6.3 Livestock Courses

Most livestock courses were regarded by respondents as very useful except for the sheep management course.

The most popular courses in livestock management were the Poultry management, Cattle management and Animal disease control with a favourable rating by 55% of respondents for each course. These results were in line with the results in part B of the questionnaire which identified poultry extension duties as the most frequently performed livestock extension activity.

5.7 Summary

Discussion of part C of the questionnaire on course topics, highlighted the following results;

5.7a. Management courses currently offered at HAC were seen as very useful to the participants. This confirmed a long held belief that management course would be very useful to progressive managers. The only course that received a poor response was the extension course. Therefore, efforts should be made to expand and identify additional management courses for inclusion in the current PCD programme.

5.7b. Low ratings for some of the crops courses do not necessarily indicate their unusefulness but merely reveal climatic variation and a farming patterns of the country. The only course in crops that did not have a high rating, though expected to, was the perennial crops course. The most poorly rated course in crops was vegetable production but this result was influenced by biased sampling of the population.

5.7c. Responses indicated that most livestock courses were perceived to be very useful, however there were some livestock courses that were perceived as not useful. These courses were sheep management (40%), cattle management (45%)

and animal disease control (20%).

5.8 Overall Results and Implications of the study.

Discussion on the results of the survey have been done part by part. The results of part A and B should now be related to part C and D and vice versa.

The activity that shows most consistent results in this survey is the report writing activity. In conjunction with the data from part A of the questionnaire, part B has identified this activity to be the most frequently performed duty by both RDTs and RDOs while part C of the questionnaire identified the report writing course to be very useful and part D identified it as second most preferred course for the PCD training. In addition the curricula comparison study prompted the author to form an assumption that report writing was offered only by HAC and FCA because it was important where English is only a second language.

The second outstanding results but less consistent was observed for project planning and management. Although, the results were not consistent throughout, they showed a definite pattern. In part A and B of the questionnaire the activity was identified to be performed only by DRDOs and senior RDOs.

Results from part C of the survey indicated project planning and management was rated at 70% while in part D it was the most preferred course. While these results do not agree with the curricula comparison results, they do confirm the authors' conclusion that the PCD project planning and management course offered may well be relevant to RDTs because of their need for the knowledge and skills it could provide.

The overall results from part B of the survey indicated very clearly that the following activities are performed very frequently;

Supervision	33% daily
Communication/Reporting	20% daily
Perennial crops advice	7% daily

The other activities registered less than 4% response for daily basis.

The set of activities performed weekly to fortnightly were;

Perennial crops	34%
Communication/Report	31%
Advice on poultry	29%
Supervision	23%
Handling finance	23%
Food crop advice	22%
Vegetables production	15%
Piggery Advice	13%
Project preparation-Gov.	6%
Project preparation-Comm.	2%

5.8.1 Implications.

If these results indicate a typical frequency of agricultural extension activities for most provinces, then one acknowledgement from training would be to improve the curriculum content and especially time allocation to courses with the highest rating.

The next step is identify the knowledge and skills needed to carry out these activities and to group them into what is termed by Professor G. Hunt Massey University as training abilities, i.e. skills needed.

Activities.	**Underlying abilities.** i.e.skills needed.
1.Supervision.	Labour management, Personnel management, delegation and control.
2. Written Communication	Report writing, Correspondence.
3. Perennial crops	Technical aspects of perennial crop husbandry.
4. Poultry advice	Technical aspects of poultry management.

5. Handling Finance	Record keeping, accounting procedure.
6. Food crop advice	Technical aspects of food crop production & management.
7. Vegetable advice	Technical aspect of vegetable production & management.
8. Piggery advice	Technical aspects of piggery management.
9.Project proposal	Project planning and management, rural project appraisal, feasibility studies, project evaluation, rural life development.

So far generic activities and their underlying abilities requirements have been identified. The next step would be to compare these underlying abilities with the course topic list in the present PCD curriculum in order to pinpoint either omissions or redundancies.

Table.5.1a Activities compared to PCD curriculum.

Activities	**Abilities**	**PCD curriculum**
Supervision		
Subordinate	Personnel manag.	Directing & control
Per labourers	Labour management	Labour types &
Casual labourer	Labour management	efficiency
Report writing		
Field reports	Report writing	writing skills extension.
Official correspondence	Communication	Communication
Special reports	Sp/report writing	non existent
Advise perennial crops		
Disease control	Disease recognition & treatment	Crop management

Marketing	Marketing	Marketing
Budgeting	Farm planning	Farm Budgeting ?
Husbandry man.	Crop management	Crop management
Assessing Special projects	Project appraisal & evaluation	Not specifically
Project planning	Project planning	Not specifically
Advise on poultry		
Feed management	Poultry management	Poultry management
Husbandry management	Poultry management	poultry management
Disease control	Animal disease control & recog.	Animal health
Marketing	Marketing	Marketing ?
Gross margin	Record keeping	Record keeping
Budgeting	Farm planning	Farm budgeting
Handling Finance		
Pay labourers	Labour management record keeping	Labour management, financial record
Collect/P/money	Record keeping	Record keeping
Produce buying	Record keeping	Record keeping
Gov/Store/Purch	Accounting	Record keeping ?
ILPOC purchases	Accounting	Record keeping
Advise on food crops		
Disease control	crop production	Crop protection
Marketing	Marketing	Marketing
Distributing planting material	Crop production or extension	Crop production

Distribution of New variety	Crop production or extension	Crop production
Advise on Vegetable		
Disease control	vegetable production	Vegetable production
Distribution of Seedlings	vegetable production or extension	Vegetable production
Nursery Management.	Vegetable production.	Vegetable production
Marketing	Marketing	Marketing ?
Budgeting	Farm planning	Farm Budgeting ?
Advise on Piggery		
Feed management	Piggery management	Pig management
Husbandry management	Piggery management	Pig management
Disease control	Disease control and recognition	Animal health
Marketing	Marketing	Marketing?
Gross margins	Record keeping	Profit & loss stat.
Budgeting	Farm planning	Farm budgeting

The above table was an attempt to compare the results from the studies with the curriculum content of the PCD courses. The first column of the table contains, activities in order of the frequency, as identified by respondents to the survey.

The second column contains what the author thought to be the abilities needed for the tasks listed in the first column.

The final column contains the actual topic titles from the current PCD

programme.

A question mark, (?) indicates where it is uncertain that a particular topic content is covered under the tittle listed.

5.9 Competence and Knowledge level of RDTs.

This study has identified activities that are frequently performed by extension workers. These have be listed in the decending order of frequencies in the above table. This study also found that most of these activities were performed more frequently by RDOs than RDTs. From these results it would seem satisfactory to use them as a measure of the suitability of the PCD curriculum and the level of its content. However, since students assessment in both the certificate and the PCD programme is normatively based, there is no indication of the competency of graduates of either programme to undertake the activities listed above.

If competency based training had been used in the certificate training program then a minimum competency level for each course would have been determined. Knowing that would have given this study a better perspective of the level of knowledge and practical skills at which RDTs were entering into the PCD training programme, and so determining the appropriate level for the PCD curriculum would have been a lot easier.

The same could be said for the PCD curriculum. Establishing competency levels for the PCD would also help employers and trainers to know the level of competency attained by each student at the end of the PCD programme.

Such an analysis of graduating students' skills competency level is well described by Holland College, (1974) using the DACUM approach. Although, this approach is based on skills performance, the principle can be incorporated into describing the academic achievements of individual students. The course objectives could also become the indicator of expected competencies for a course. The learning activities used to achieve each objective would then

become the determinants of competencies achieved for each course objective. How well these learning activities were performed could determine a level of competence attained by each student.

5.9.1 Competence based example.

An example of this follows;

OBJECTIVE: **Students should be able to identify management problems affecting farm production.**

Activities for the particular objective;

1. List ten possible management problems that could affect farm production.
2. Describe how these management problems affect farm production.
3. Differentiate more important problems from less important ones.
4. Explain why the more important problems are considered to be so.

If these activities are performed satisfactorily by a student then he should be given a maximum rating of competency. The overall assessment system should incorporate each rating of competencies into a final grading of an individual's performance.

The minimum level of competence required would determine the time allocated to courses and topics within courses. Those subjects with four or five periods per week allocated would expect much higher levels of competency than those courses allocated three and less periods per week.

Such a system would only work if the competency based training and assessment is incorporated into present normative and/or achievements based assessment.

The present PCD achievement based grading system is as follows:

A- 97%-100% -Distinction

B-85%-96% -Credit

C- 67%-84% -Upper Pass

D- 56%-66% -Pass

E- 55% and less -Fail.

This could be improved by including a relative competency to the system. And this could look like this;

Grading System including Competency.

A-97%-100% -Distinction-Competent,needs no supervision.

B-85%-96% -Credit-Competent but needs some supervision.

C-67%-84%-U/Pass -Needs regular supervision.

D-56%-66% -Needs constant supervision.

The above competency scale is explained below:

Competency Scale:

1. Competent and needs no or very little supervision.

Those are students who have successfully completed at higher level of competency. They would be expected to perform on the job with minimum supervision or no supervision.

2. Competent but need some supervision.

These are students who have completed successfully only some of the competencies at a high levels. They would perform some tasks with ease but would require some supervision for others.

3. Need regular supervision and direction.

These are students who have achieved at a lower level of competency and would require regular supervision to perform their duties well.

4. Can not perform well without constant supervision.

These are students who would have achieved the least number of competencies at the required level or most competencies at a lower level and would be

heavily dependent on regular induction training and supervision.

There are many advantages of using competency based training but one that stands out for HAC is that the competence level of individual students is determined before they leave the institution.

5.9.2 Establishing Competencies

Minimum competency level could be established for all PCD course objectives by following the example given above. The author's suggested list is presented below.

Minimum acceptable standard of competence for livestock section:

1.0 Poultry

1.1 Husbandry.

Students should be able to describe;

- Housing requirements depending on the number birds very accurately.
- Brooding and brooding requirement very accurately.
-Correct feeds and feeding management for different classes of stock very accurately.

1.2 Common diseases.

- The symptoms of common diseases, such as coccidioses and others contained in the course content fairy accurately.
- The treatment for various diseases fairly accurately.

1.3 List the sources of day old chicken and other input fairly accurately.

2.0 Piggery

2.1 Husbandry

Students should be able to describe;

- Hygiene and condition for hygiene very accurately.
-How to do mating, farrowing, weaning, clipping and castration fairly accurately.

-The correct types of feeds and amounts for various class of stock fairly accurately.

2.2 Disease control

-The symptoms of common diseases accurately.

-The correct treatment for various common diseases very accurately.

2.3 Management

- Suitable types of record systems for a piggery.

-Different sources of input supplies.

Crops Section.

3.0 Perennial crops.

3.1 Husbandry

Students should be able to describe;

-The priority activities of nursery management accurately.

-The activities of lining, spacing and planting accurately

-The correct chemicals and rate for weed control accurately.

-The importance of correct fertilizer, rates and timings of application accurately.

3.2 Pest and diseases

-Symptoms of some of common pests and diseases and their relevant treatment fairly accurately.

3.3 management

-Processing and storing procedure for better quality.

-The activities needed for record keeping.

4.0 Food crop production.

4.1 Husbandry

Students should be able to describe;

-Soil tillage procedure.

-The reason for selecting good seeds & planting materials very accurately.

- Selecting types rates and methods of applying fertilizer very accurately.

-Weeds control methods accurately.

4.2 Pest & Diseases

-Common symptoms of pests & diseases and the appropriate treatment fairly accurately.

4.3 Harvest and post harvest management

- Quality harvesting, storing and packaging accurately.

Management Section.

5.0 Management

5.1 Record keeping.

Students should be able to;

-describe the essential information content of a good record for various enterprises.

-describe accurately develop a good record system accurately.

-Identify from a given list, items that would constitute a typical farm inventory accurately.

-Calculate depreciation fairly accurately.

-Calculate from a given data gross margins & a profit and loss statement very accurately.

5.2 Production factors

-Describe important factor of production very accurately.

-Describe the essentials of land and its turnure.

-Describe the place of labour and identify the different types of labour required by different enterprises fairly accurately.

-Describe the role of capital in farming very accurately.

-Identify sources of capital very accurately.

-Be aware of bank policies and regulations.

5.3 List essential tools for decision making very accurately

5.4 Marketing

-Identify marketing organisations and marketing channels accurately.

-Describe why price and quality are determinants of profit accurately.

5.5 Long term planning.

-Identify the physical elements of farm planning very accurately.

-List procedure for appraising market outlet and demand very accurately

-Formulate different schedules from a given data fairly accurately.

-Develop a cash flow budget from a given set of data very accurately.

-Be aware of loan application procedures.

6.0 Rural Engineering

6.1 Starting engine

-Describe the essential checks before starting engine fairly accurately.

-Describe the procedure for selecting and using the right speed during operation fairly accurately.

6.2 Servicing

-Describe the essentials activities in servicing.

-Identify the important activities in servicing.

6.3 Tractor operation.

-List guidelines for successful control of tractor during operation fairly accurately.

6.4 Basic carpentry

-Identify & list typical carpentry tools fairly accurately.

-Describe the purpose of each of these tools fairly accurately.

-Sketch & then draw to scale a farm building fairly accurately.

6.5 Farm building

-Plan a farm building accurately.

-Identify, list and cost out all necessary building materials.

5.9.3 Summary of Competencies.

The measurable objectives stated above are the basis for establishing

competency standards, however, they do not tell exactly how many of these measurable objectives a student has pass to achieve the minimum overall competency level. The following is a summary of suggested standards that students should achieve in order to graduate with a qualification such as PCD.

5.9.3.1 Livestock courses.

A student should be able to achieve all the objectives listed above and the minimum acceptable standards of competency should be 67% or better for all theoretical and practical skills in livestock courses offered for the PCD.

5.9.3.2 Crops Courses

A student should be required to achieve most, if not all, important crops course objectives. The minimum acceptable standard of competence should be 67% or better for the following courses;

- Perennial crops
- Food crop production
-vegetable production

All other crops courses offered in the certificate should be at 56% or better.

A student should be required to achieve most if not all, of the stated objectives in farm management courses. The minimum acceptable standard of competence should be 67% or better for all courses in farm management.

A student should be required to achieve all rural engineering course objectives. The minimum acceptable standard of competence should be 56% or better for tractor operation, small engine, and carpentry courses.

A student should be required to achieve above minimum competency for practical skills objectives in both crops and livestock practical sessions. The minimum standard of competence should 67% if not better.

CHAPTER 6: CONCLUSION AND RECOMMENDATION.

6.1 Introduction

As mentioned earlier, the purpose of this study was to determine whether the curriculum and, particularly the farm management component in the current Post Certificate Diploma (PCD) training programme contained suitable and adequate management knowledge and skills training to meet the vocational needs of Rural Development Officers (RDOs). To determine these needs a comparison was made of the farm management curricula from a selection of similar agricultural institutions within the commonwealth and responses were sought to a survey questionnaire from graduates of the current PCD training programme and a small group of certificate graduates. The results and the discussions of these studies are presented in chapter 4 and 5.

This chapter concentrates on drawing conclusions from these results, and in particular, from those on report writing and the project planning and management.

6.2 Report writing

Results from part B of the questionnaire indicated that report writing was the most frequently performed activity by both RDOs and RDTs. This result was consistent with responses from part C where respondents indicated the report writing course to be very useful. Further, in part D of the questionnaire respondents perceived report writing second only in importance to project planning and management.

6.3 Project planning and management.

Part B of the questionnaire, identified project planning and management to be performed only by DRDOs and senior RDOs. However, in part C of the questionnaire most RDOs indicated that the project planning and management course was very useful to them and in part D of the questionnaire, the majority of respondents indicated a need for the inclusion of a fully expanded project planning and management course.

6.4 Conclusion

The author concluded from these results that the training areas most needed by the RDTs to enable them perform better as RDOs are advanced report writing and project planning and management. Although the author is unable to identify specific report writing content he assumes that the difficulties most RDOs face is not in the routine report writing but in the area of preparing proposals, either for development projects or for other district plans. If these are the areas where problems are currently experienced then this study recommends:

6.4.1 That the current HAC report writing course be immediately reviewed and expanded to provide the skills needed by RDTs to perform effectively at RDO level.

6.4.2 That the present HAC curriculum, component on project planning management be expanded to include the full contents of a project planning course as presented in appendix 6. This means that the time allocated to project planning and management would be increased from the current 56 periods to 112 periods. To accommodate this increase, periods allocated for other courses would have to be reduced.

6.4.3 That 84 periods out of 112 be allocated to the theoretical part of project planning and management while 28 periods be allocated to case studies and practical exercises of students choice. In the practical exercises personnel from other departments should be involved to assist students with the collection and analysis of technical data for their chosen exercises.

6.4.4 Comments made by respondents about rural engineering being an irrelevant course because of the current lack of demand for rural engineering in the extension services are acknowledged and it is recommended that the total time allocated to rural engineering be reduced from 224 periods by 56 periods.

6.4.5 That a further study be conducted to determine in greater depth the exact training needs requirements of RDTs aspiring to become RDOs and in particular the needs of both RDTs and RDOs for training in project planning and management. A questionnaire that could be used for this task is presented in appendix 3.

6.4.6 That if above recommendations can not be followed then at least the current feasibility studies curriculum content be reorganised as suggested by the author and presented in appendix 5.

APPENDIX 1: CORRESPODENCE.
CORRESPONDENCE 1A.

Ref:Walep.fma/ca16
4 April 1991

LETTER OF INTRODUCTION: VICTOR WALEP, A STUDENT AT MASSEY UNIVERSITY.

This is merely to introduce Mr. Victor Walep, who is currently under taking a Masters programme in Agricultural Science at Massey University.

As part of his traning requirement, he is expected to do a research project of his choice. Mr. Walep has chosen to review the Farm management course syllabus which is presently thaught at Highlands Agricultural College, in Papua New Guinea.

I would appreciate your assistance with the provision of requested material,if it is at all possible.

Yours faithfully

Professor Frank Anderson.

CORRESPONDENCE 1B.

Ref:Walep.fma/2/ca16
4 April 1991

Dear Sir

REQUEST FARM MANAGEMENT COURSE SYLLABUS OR DESCRIPTION FROM YOUR COLLEGE.

I am Victor Walep, from Papua New Guinea currently doing a Masters programme in Agricultural Science at Masey University. As part of my project study, I wish to review the Farm Management course syllabus which is offered in the final year of the Post Certificate Diploma Course programme at Highlands Agricultural College in Papua New Guinea.

I am hoping to collect the Farm Management Course syllabi or course prescriptions from a number of similar agricultural training institutions and from these I hope to make a comparative and finally to select from them materials that would be relevant to my review.

If possible, could you send me your College curriculum or the Farm Management course syllabus or any other materials you see suitable for my purpose.

I would appreciate very much any assistance you could give.

I Thank you in advance in anticipation of your favourable consideration and assistance.

Yours faithfully

Victor Walep
Postgraduates Student.

APPENDIX 2: SURVEY QUESTIONNAIRE.

PART A: PERSONAL PARTICULARS.

Name———— Province————

Substantive position———— Department————

Designation———— Year attended PCD————

Acting position———— Year attended Cert.————

Number of subordinates———— Highest sub.position————

Immediate Supervisor's
position.———— Designation————

Would you want a copy of this report? YES/NO. Please provide your postal address below.

_____
_____
_____
_____
_____
_____

(Walep.Qut/postgrads91/ca)

PART B: TASKS LIST.

The questionnaire in part B includes a list of different possible jobs that you might perform. Your are asked to select the jobs you perform and then indicate how often you perform these jobs. This can be done by drawing a circle around the number that you think is the closest (from the range 5-1). The explanation of the numbering is as follows:

5 = almost every day
4 = once or twice a week
3 = once or twice a fortnight
2 = once or twice a month
1 = less than once a month
0 = never

Circle only one number in each line. For an example, if you pay labourers once a fortnight, then the number you should circle is 3 only from that line.

JOB						
Handling finance						
Paying labourers	5	4	3	2	1	0
Collecting and receiving P/money	5	4	3	2	1	0
Produce buying	5	4	3	2	1	0
Buying G/store item	5	4	3	2	1	0
Buying using ILPOC	5	4	3	2	1	0
Writing						
Field report (FOJ)	5	4	3	2	1	0
Official correspondence	5	4	3	2	1	0
Special project review	5	4	3	2	1	0
Others————	5	4	3	2	1	0
Supervision						
Subordinates	5	4	3	2	1	0
Permanent labourers	5	4	3	2	1	0
Casual labourers	5	4	3	2	1	0
Advise poultry farmers						
Feed management	5	4	3	2	1	0
Husbandry management	5	4	3	2	1	0
Disease control & med.	5	4	3	2	1	0
Marketing	5	4	3	2	1	0
Gross margin	5	4	3	2	1	0
Budgeting for projects	5	4	3	2	1	0
General visit	5	4	3	2	1	0
Advise piggery farmers						
Feed management	5	4	3	2	1	0
Husbandry management	5	4	3	2	1	0
Disease control & med.	5	4	3	2	1	0
Marketing	5	4	3	2	1	0
Gross margin	5	4	3	2	1	0

Budgeting for projects	5	4	3	2	1	0
General visit	5	4	3	2	1	0
Advise on Coffee/coconut/cocoa						
Disease control	5	4	3	2	1	0
marketing	5	4	3	2	1	0
Budgeting	5	4	3	2	1	0
Assessing special project	5	4	3	2	1	0
Prepare project submission	5	4	3	2	1	0
General visit	5	4	3	2	1	0
Advise on food crops						
Disease control	5	4	3	2	1	0
Marketing	5	4	3	2	1	0
Distributing p/materials	5	4	3	2	1	0
Distributing new varieties	5	4	3	2	1	0
Advise on vegetables						
Disease control	5	4	3	2	1	0
Distributing seedlings	5	4	3	2	1	0
Nursery management	5	4	3	2	1	0
Marketing	5	4	3	2	1	0
Budgeting	5	4	3	2	1	0
Preparing project submission for bank funding						
Coffee	5	4	3	2	1	0
Coconut	5	4	3	2	1	0
Cocoa	5	4	3	2	1	0
Oil palm	5	4	3	2	1	0
Piggery	5	4	3	2	1	0
Poultry	5	4	3	2	1	0
Others ———	5	4	3	2	1	0
Preparing project submission for Government funding						
Coffee	5	4	3	2	1	0
Coconut	5	4	3	2	1	0
Cocoa	5	4	3	2	1	0
Oil palm	5	4	3	2	1	0
Piggery	5	4	3	2	1	0
Poultry	5	4	3	2	1	0
Others duties (please specify)						
———	5	4	3	2	1	0
———	5	4	3	2	1	0
———	5	4	3	2	1	0
———	5	4	3	2	1	0
———	5	4	3	2	1	0

Please provide general comments on your time allocation.

_____

_____

_____

PART C: PCD COURSE PROGRAMME.

This part of the questionnaire refers to the actual courses you have taken in the PCD course programme. Please indicate the usefulness of these courses to your present job. In other words, which of these courses have helped you to do your job better now than you were able to do before the course.

Explanation of the numbering is as follows:

5 = Very useful
4 = Useful
3 = Fairly useful
2 = Sometime useful
1 = Never useful

Subject topics in Farm Management					
Record keeping	5	4	3	2	1
Report writing	5	4	3	2	1
Problem solving	5	4	3	2	1
Project Planning	5	4	3	2	1
Budgeting/ Gross margin	5	4	3	2	1
Feasibility studies	5	4	3	2	1
Financial records	5	4	3	2	1
Subjects in Livestock course					
Poultry management	5	4	3	2	1
Piggery management	5	4	3	2	1
Sheep management	5	4	3	2	1
Cattle management	5	4	3	2	1
Animal disease and control	5	4	3	2	1
Subjects in Crop Management	5	4	3	2	1
Land management	5	4	3	2	1
Post harvest	5	4	3	2	1
Perennial crop	5	4	3	2	1
Vegetable production	5	4	3	2	1
Project Work					
Option project work	5	4	3	2	1
Students' vegetable project	5	4	3	2	1

Please provide any general comment you wish to make on the present PCD course.

_____

_____

_____

_____

PART C: SUGGESTION FOR SUITABLE COURSES

Either select from the subject list (Part C) or any other subject you think you need further training on to help you perform your job better. Please list them in the order of importance, starting with the most important.

GENERAL

Are there any other major problems affecting your performance apart from training? Please list up to five of the most important problems and provide a brief explanation for each one as it affects your work (some examples: distance problem, transport, financial resources, number of farmers under your responsibility)

Thank you for participating in this useful exercise.

Victor Walep.

APPENDIX 3:
SURVEY QUESTIONNAIRE.

SURVEY QUESTIONNAIRE.

Introduction.

This research survey is conducted to collect necessary data for training needs assessment. The study hopes to analyze data collected through this survey and determine the relevance of the courses in the current PCD programme. The major emphasis of this study is on the PCD programme, but the data collected will be useful to review other short inservice courses as well.

There are a number of different types questionnaire models which can be used for the purpose of collecting data for training need analysis. The model used in this study was developed by Professor G. Hunt of Massey University, New Zealand. This model was chosen because the model seems to follow a logical sequence and identifies the underlying abilities (shkills needed) in the process. The important thing about this model is that it requires respondents like yourselves to think about your responsibilities and then provide response to these questions with the understanding of your task in an organisation. Because the questionnaire follow a sequence you will start by giving your personal details and then choosing a mission statement. Other questions in the questionnaire will have to be answered in view of your mission statement.

The questionnaire has four components. They are; Biographical Data, the Mission Statement, Accomplishments and the Performance. Please take note of explanations provided for each component before answering any questions that follow. The questionnaire components are laid out in the following format.

Biographical Data	⇒	**Mission Statment**	⇒	**Accomplish-ment**	⇒	**Performance**

Brief explanation of the layout.

Old format	**New format.**
1. Personal Particulars.	Biographic Data
2.Goals or Objectives.	Mission Statement.
3.No definite term used.	Accomplishments.
4.Task analysis.	Performances

BIOGRAPHICAL DATA (PERSONAL PARTICULARS)

Directions

Please answer the questions in this section by ticking in the bracket or write in the space provided what is true for you.

Question 1.

Please write your name in the space provided.

Family Name ——————————Given Name——————————

Question 2.

Please indicate your age.

( ) 17-19 years

( ) 20-24 years

( ) 26-29 years

( ) 30-40 years

( ) 40-50 years

Question 3.

Please indicate your sex.

( ) Male

( ) Female

Question 4.

Please indicate your highest secondary educational qualifications.

( ) Grade 10 certificate.

( ) Grade 12 certificate.

( )Others -specify——————————————————

Question 5.

Please write down your tertiary qualifications.

1.———————————————————————————————

2.———————————————————————————————

3.———————————————————————————————

Question 6.

Please indicate your substantive and acting positions in the space provided.

1.Substantive position————————————Designation————————

2.Acting position————————————————Designation————————

Question 7.

Please indicate how long you have been working with the D.A.L.?

( ) less then 1 year

( ) 1-2 years

( ) 3-5 years

( ) 6-10 years

( ) 10-20 years

( ) 21-40 years

Question 8.

Please indicate how long have you worked in your present position?

( ) less than a year

( ) 2-3 years

( ) 4-6 years

( ) over 6 years

Question 9.

Please write in the space provided substantive position and designation of your immediate supervisor.

a) Substantive Position————————————————————————

b) Designation————————————————————————————

Question 10

Please indicate in the bracket the number of people under your supervision.

( ) Nil

( ) 1-3 people

( ) 4-6 people

( ) 7-10 people

( ) more than 10.

Question 11

Please write the substantive position and the designation of your immediate subordinates if there are people under your supervision.

Sub/position ———————————— Designation————————————

MISSION

Question 12

Definition.

Mission is a statement which best describes the organisational purpose or goal to which you in function as a rural development officer would contribute to achieving it. Please indicate from the sentences below what you think is the best sentence that describes the goals of the Derpartment of Agriculture and Livestock. Please indicate this by thicking (only 1) in the bracket provided.

---

1) ( ) To encourage agricultural development by making agricultural supplies readily available to farmers,such as seedlings, seeds, chemicals and other needed supplies.

2) ( ) To make people become aware of the need for promoting agricultural development changes to enable agricultural development growth.

3) ( ) To encourage agricultural development growth and enhancing quality of life in rural areas by providing farmers with relevent information on the latest agricultural practises and techonogy.

4) ( ) To advise rural farmers on the means and methods of crop and animal husbandary.

5) ( ) To provide the best extesion servics so people in the rural areas can participate in agricultural development.

6) ( ) To train many potential farmers so that through them we could achieve maximum agricultural development.

Question 13. **ACCOMPLISHMENTS**

DEFINITION

Accomplishment is defined as ;

The capabilities of individual or group that are important to achieve those aspect of the mission which are relevant to them. These capabilities are broad functional abilities

DIRECTIONS

As Capable DAL officers you are asked to choose six accomplishment below which you consider as important to achieve the stated mission in question 12. As a reminder, please read the mission statement you have chosen once more before you choose the phrases (accomplishments) below.

Of the choice given below, you are asked to tick only six. If you feel the choice given below is not appropriate to the mission statement, then please write your own in the space provided. After you have ticked or written in your own phrases (accomplishment), go to the right hand column and rank your selection in order of importance. Write No 1 in the bracket of the phrase that you consider to be the most important accomplishment in achieving your mission. Please write 1 to 6 in order of importance.

Accomplishments	**Priority rank**
( ) Management of People	( )
( ) Managing agriculture knowledge	( )
( ) Communicating and interviewing farmers	( )
( ) Managing organisation	( )
( ) Managing human interaction with environment	( )
( ) Self development	( )
( ) Financial management	( )
( )_____	( )
( )_____	( )

PERFORMANCE

Question 14

DEFINITION

The next step in this model is to identify the performances which are the specific abilities that make up accomplishments, (the six that you have chosen in question No13.). The following are list of performances (activities), that you must select for each accomplishment. The important thing to remember is that the selections you make from these performances must have some influence on its associated accomplishment. In other words, the performance you select in the following list must contribute something to that accomplishment.

IDENTIFY THE FIRST ACCOMPLISHMENT.

Please write in the space provided the Accomplishment that you ranked number 1 in question No13. This is mainly to remind you so that you do not go off the track.

1._____

_____

_____

Now choose from the list below up to six (6) performances that best apply to your number 1 accomplishment. After you have selected these performance by ticking on the left hand column, go to the rank column on the right hand and rank these performance in order of importance. There is also enough space in the form for you to write any selection that you think should be included and indicate its priority.

Select.	**Performance**	**Rank.**	**Select**	**Performance**	**Rank**
	Book keeping			Feasibility studies	
	Written Communication			Planning and Budgeting	
	Problem solving skill			Research Project	
	Oral communication			Fertilizer Management	

	Project Planning			Agricultural Marketing	
	Farm Planning			Directing & control	
	Community Development			Government Accounting	
	Resolving Conflict			Appraisal of L/stock	
	Motivating People			Appraisal of A/Crops	
	Animal health			Appraisal of P/Crops	
	Animal husbandry			Knowledge of Spices	
	Pig and poultry management			L/stock Commercial Production	
	Cattle Management			Farm Valuation	
	Vegetable production			Teaching demonstrating	
	Perennial crop Management			Giving advice	
	Perennial crop production				
	Land management				
	Crop pathology				
	Processing loan application				
	Chemical safety management				

PERFORMANCE

Question 14

DEFINITION

The next step in this model is to identify the performances which are the specific abilities that make up accomplishments, (the six that you have chosen in question No13.). The following are list of performances (activities), that you must select for each accomplishment. The important thing to remember is that the selections you make from these performances must have some influence on its associated accomplishment. In other words, the performance you select in the following list must contribute something to that accomplishment.

IDENTIFY THE FIRST ACCOMPLISHMENT.

Please write in the space provided the Accomplishment that you ranked number 2 in question No13. This is mainly to remind you so that you do not go off the track.

1._____

_____

_____

Now choose from the list below up to six (6) performances that best apply to your number 2 accomplishment. After you have selected these performance by ticking on the left hand column, go to the rank column on the right hand and rank these performance in order of importance. There is also enough space in the form for you to write any selection that you think should be included and indicate its priority.

Select.	Performance	Rank.	Select	Performance	Rank
	Book keeping			Feasibility studies	
	Written Communication			Planning and Budgeting	
	Problem solving skill			Research Project	
	Oral communication			Fertilizer Management	

	Project Planning			Agricultural Marketing	
	Farm Planning			Directing & control	
	Community Development			Government Accounting	
	Resolving Conflict			Appraisal of L/stock	
	Motivating People			Appraisal of A/Crops	
	Animal health			Appraisal of P/Crops	
	Animal husbandry			Knowledge of Spices	
	Pig and poultry management			L/stock Commercial Production	
	Cattle Management			Farm Valuation	
	Vegetable production			Teaching demonstrating	
	Perennial crop Management			Giving advice	
	Perennial crop production				
	Land management				
	Crop pathology				
	Processing loan application				
	Chemical safety management				

PERFORMANCE

Question 14

DEFINITION

The next step in this model is to identify the performances which are the specific abilities that make up accomplishments, (the six that you have chosen in question No13.). The following are list of performances (activities), that you must select for each accomplishment. The important thing to remember is that the selections you make from these performances must have some influence on its associated accomplishment. In other words, the performance you select in the following list must contribute something to that accomplishment.

IDENTIFY THE FIRST ACCOMPLISHMENT.

Please write in the space provided the Accomplishment that you ranked number 3 in question No13. This is mainly to remind you so that you do not go off the track.

1._____

_____

_____

Now choose from the list below up to six (6) performances that best apply to your number 3 accomplishment. After you have selected these performance by ticking on the left hand column, go to the rank column on the right hand and rank these performance in order of importance. There is also enough space in the form for you to write any selection that you think should be included and indicate its priority.

Select.	Performance	Rank.	Select	Performance	Rank
	Book keeping			Feasibility studies	
	Written Communication			Planning and Budgeting	
	Problem solving skill			Research Project	
	Oral communication			Fertilizer Management	

	Project Planning			Agricultural Marketing	
	Farm Planning			Directing & control	
	Community Development			Government Accounting	
	Resolving Conflict			Appraisal of L/stock	
	Motivating People			Appraisal of A/Crops	
	Animal health			Appraisal of P/Crops	
	Animal husbandry			Knowledge of Spices	
	Pig and poultry management			L/stock Commercial Production	
	Cattle Management			Farm Valuation	
	Vegetable production			Teaching demonstrating	
	Perennial crop Management			Giving advice	
	Perennial crop production				
	Land management				
	Crop pathology				
	Processing loan application				
	Chemical safety management				

PERFORMANCE

Question 14

DEFINITION

The next step in this model is to identify the performances which are the specific abilities that make up accomplishments, (the six that you have chosen in question No13.). The following are list of performances (activities), that you must select for each accomplishment. The important thing to remember is that the selections you make from these performances must have some influence on its associated accomplishment. In other words, the performance you select in the following list must contribute something to that accomplishment.

IDENTIFY THE FIRST ACCOMPLISHMENT.

Please write in the space provided the Accomplishment that you ranked number 4 in question No13. This is mainly to remind you so that you do not go off the track.

1._____

_____

_____

Now choose from the list below up to six (6) performances that best apply to your number 4 accomplishment. After you have selected these performance by ticking on the left hand column, go to the rank column on the right hand and rank these performance in order of importance. There is also enough space in the form for you to write any selection that you think should be included and indicate its priority.

Select.	Performance	Rank.	Select	Performance	Rank
	Book keeping			Feasibility studies	
	Written Communication			Planning and Budgeting	
	Problem solving skill			Research Project	
	Oral communication			Fertilizer Management	

	Project Planning			Agricultural Marketing	
	Farm Planning			Directing & control	
	Community Development			Government Accounting	
	Resolving Conflict			Appraisal of L/stock	
	Motivating People			Appraisal of A/Crops	
	Animal health			Appraisal of P/Crops	
	Animal husbandry			Knowledge of Spices	
	Pig and poultry management			L/stock Commercial Production	
	Cattle Management			Farm Valuation	
	Vegetable production			Teaching demonstrating	
	Perennial crop Management			Giving advice	
	Perennial crop production				
	Land management				
	Crop pathology				
	Processing loan application				
	Chemical safety management				

PERFORMANCE

Question 14

DEFINITION

The next step in this model is to identify the performances which are the specific abilities that make up accomplishments, (the six that you have chosen in question No13.). The following are list of performances (activities), that you must select for each accomplishment. The important thing to remember is that the selections you make from these performances must have some influence on its associated accomplishment. In other words, the performance you select in the following list must contribute something to that accomplishment.

IDENTIFY THE FIRST ACCOMPLISHMENT.

Please write in the space provided the Accomplishment that you ranked number 5 in question No13. This is mainly to remind you so that you do not go off the track.

1._____

_____

_____

Now choose from the list below up to six (6) performances that best apply to your number 5 accomplishment. After you have selected these performance by ticking on the left hand column, go to the rank column on the right hand and rank these performance in order of importance. There is also enough space in the form for you to write any selection that you think should be included and indicate its priority.

Select.	Performance	Rank.	Select	Performance	Rank
	Book keeping			Feasibility studies	
	Written Communication			Planning and Budgeting	
	Problem solving skill			Research Project	
	Oral communication			Fertilizer Management	

	Project Planning			Agricultural Marketing	
	Farm Planning			Directing & control	
	Community Development			Government Accounting	
	Resolving Conflict			Appraisal of L/stock	
	Motivating People			Appraisal of A/Crops	
	Animal health			Appraisal of P/Crops	
	Animal husbandry			Knowledge of Spices	
	Pig and poultry management			L/stock Commercial Production	
	Cattle Management			Farm Valuation	
	Vegetable production			Teaching demonstrating	
	Perennial crop Management			Giving advice	
	Perennial crop production				
	Land management				
	Crop pathology				
	Processing loan application				
	Chemical safety management				

PERFORMANCE

Question 14

DEFINITION

The next step in this model is to identify the performances which are the specific abilities that make up accomplishments, (the six that you have chosen in question No13.). The following are list of performances (activities), that you must select for each accomplishment. The important thing to remember is that the selections you make from these performances must have some influence on its associated accomplishment. In other words, the performance you select in the following list must contribute something to that accomplishment.

IDENTIFY THE FIRST ACCOMPLISHMENT.

Please write in the space provided the Accomplishment that you ranked number 6 in question No13. This is mainly to remind you so that you do not go off the track.

1._____

_____

_____

Now choose from the list below up to six (6) performances that best apply to your number 6 accomplishment. After you have selected these performance by ticking on the left hand column, go to the rank column on the right hand and rank these performance in order of importance. There is also enough space in the form for you to write any selection that you think should be included and indicate its priority.

Select.	Performance	Rank.	Select	Performance	Rank
	Book keeping			Feasibility studies	
	Written Communication			Planning and Budgeting	
	Problem solving skill			Research Project	
	Oral communication			Fertilizer Management	

	Project Planning			Agricultural Marketing	
	Farm Planning			Directing & control	
	Community Development			Government Accounting	
	Resolving Conflict			Appraisal of L/stock	
	Motivating People			Appraisal of A/Crops	
	Animal health			Appraisal of P/Crops	
	Animal husbandry			Knowledge of Spices	
	Pig and poultry management			L/stock Commercial Production	
	Cattle Management			Farm Valuation	
	Vegetable production			Teaching demonstrating	
	Perennial crop Management			Giving advice	
	Perennial crop production				
	Land management				
	Crop pathology				
	Processing loan application				
	Chemical safety management				

APPENDIX 4

Sample Duty Instruction of RDTs and RDOs

Sample RDT Duty Instruction.

Duties of an RDT include the following:

1. The first duty of an RDT is extension;

    1.1 Regular visit to farmers directly under your supervision who may need technical and managerial advice.

    1.2 Provide consultation services to visiting farmers seeking advice.

    1.3 Distribute seeds, planting materials of new or improved varieties to farmers in your area.

    1.4 Set up demonstration plots on farmer's land or at the station.

    1.5 Conduct trial plots if and when necessary prior to distribution if there is any doubt of success of new introduction.

    1.6 Conduct demonstration as necessary for farmers in your area.

    1.7 Maintain an accurate record of daily activities at all times.

    1.8 Submit a field report to your superior on a regular basis, preferably fortnightly.

2. General duties.

    2.1 Provide daily supervision of labourers under your responsibility.

    2.2 Make regular purchases of approved items so you do not run out of materials and supplies for your duties.

    2.3 Compile general budget estimates for the recurrent expenditure in your area of responsibility.

    2.4 Maintain a good working relations with other departments working in the district.

    2.5 Consult your superior on any aspect that would require attention or for general problems experienced in your area of responsibility.

    2.6 Be prepared to take on any responsibility as may be directed by your immediate superior or the District Administrative officer.

Sample DRDO Duty Instruction.

As a District Rural Development Officer (DRDO), you are responsible for the general agricultural extension services and development projects in the district. This duty instruction will form broad guidelines for these responsibilities.

1.District extension responsibilities:

1.1 Plan all extension programs for the district.

1.2 Allocate resources at your disposal among competing extension duties and ensure that these resources are used as effectively as possible.

1.3 Establish a monitoring system for all extension programs and ensure that monitoring system is operative.

1.4 Provide constant guidance and assistance to your subordinates as necessary.

1.5 Maintain a good liaison with Village leaders in your area at all times.

1.6 Provide regular monitoring of development projects in your area.

1.7 Provide a development progress report to Head Office as required (monthly basis).

1.8 Submit to Head Office a monthly report on all activities for the district.

2. Administration

2.1 Reissue duty instructions to all subordinates under your control.

2.2 With duty instructions, delegate responsibility with discretional authority to subordinates as necessary.

2.3 Ensure that subordinates problems are attended to as required.

2.4 Ensure that proper discipline procedure is followed if any discipline is needed. If not sure of correct procedure contact H/Office immediately

2.5 Ensure that a detailed expenditure budget is compiled for your district by March each year.

2.6 Ensure that any proposed development projects for the district are accompanied with well researched data.

2.7 Ensure that needed material and supplies are provided and are

readily available.

2.8 Ensure that expenditure is well controlled.

3. General duties.

3.1 Ensure that a good working relations are maintained by you and subordinates with other Government employees in the district.

3.2 Ensure that DAL participates meaningfully in any major events at the district.

3.3 Provide support services to schools on agricultural studies.

3.4 Do not hesitate to call H/Office for help and advice

APPENDIX 5:

SUGGESTED RE-ORGANISED FEASIBILTY STUDIES' COURSE.

Topics	Content
1.0 Introduction	Definition of project; development project, rural integrated project, projects.
1.2 Importance	Financial, social and ecumenical benefits.
1.3 Identification	Local Government, civil servants, politicians, villagers, local leaders and etc.
2.0 Feasibility study	
2.1 Appraise market	Determine market potential, market outlet, current market price, alternative commodity in the market.
2.2 Appraise technical	Determine fixed cost- land, building, infrastructure, etc.
2.3 Appraise Financial	Production cost and benefit. sources of finanace.
2.4 Determine Profitability	Socially, economically and/or financially.
2.5 Decision	Decision need to be made based on the outcome the sutdies and it objectives.

APPENDIX 6:

SUGGESTED PROJECT PLANNING and MANAGEMENT COURSE

Topics	Contents
1.0 Introduction	Definition; Development projects, Integrated projects and minor Projects.
2.0 Project identification	Politicians; Local Government authorities, Civil servants, Villagers, overseas donors and others.
3.0 Selection Critreia	Socio-economic benefit, finanacial benefit.
4.0 Determining	Size, scope and scale of projects.
5.0 Conduct Feasibility study	
5.1 Appraise market aspect	Adequate market present; market potential; competitive cost of production and distribution, price of product, marketing infrastructure.
5.2 Technical aspects	Fixed cost - land, building, machinery, equipment, availability and sources of fixed cost. Direct cost-manufacturing cost.
5.3 Financial aspect	Running costs, other cost-eg promotion cost, interest cost, etc. Sales and receipts estimates.
5.4 Social aspect	Social cost and benefit to society- cost/benefit analysis.
6.0 Approval	Secure approval from relevant authority.
7.0 Prepare Investment proposal	Prepare documents for funding requirements, equity needs, equity versus debt and other requirements.
9.0 Implementation	Programming implementation, organisation of resources,

	procurement of materials and supplies.
10.0 Controlling	Checking implementation program, checking execution dates, checking achievement dates, checking materials and supplies on hand, progress on target.
11.0 Evaluation	Evaluate expenditure on target, evaluate progress and achievement on target, provide alternative correction, evaluate other needs of the project.

12.0 Practical Exercise

In the Practical component of the course students should be given case studies compiled by lecturers and allow a project of their own with two choice. With the former, diversity should be provided to minimise copying and homogeneity. The latter project should also be encouraged to draw realistic examples from the field and colobarate with officers from the Crops and Livestock Department. This should be allocated a maximum of 28 periods and if more time is needed then this should be in students' own time.

APPENDIX 7: FARM MANAGEMENT COURSE.

FARM MANAGEMENT COURSE IN THE PCD CURRICULUM:

MANAGEMENT SKILLS I

2 weeks or 56periods.

Introduction to Management:

Topic and content:

1. The importance of management in agriculture:
   - -importance of recording, financial and physical.
   - -better understanding of morale and motivation.
   - -management skills required so that best use can be made of all labour resources.

1.1 Understanding how organisation work and how your section fits into the all organisation.

1.2 Methods of communication within these organisation:

a study of how important good leadership can play in management.

2. Record keeping

2.1 Physical records

- -inventory taking and depreciation
- -diary or daily farm activity record
- -summary of work record
- -livestock record
- -crops record
- -general farm record

2.2 Financial records;

- -assets and liabilities
- -income and expenditure
- -classification of income
- -classification of expenditure
- -use of receipt and invoice
- -credit note, statement, cheque butt, deposit slip and

bank statement.

-profit and lost statement.

-calculation of net profit

-basic step in book keeping

3 Report writing:

3.1 Define the aim of your report.

-understanding your aim

-thinking about your aim

3.2 Deciding type of your report.

-deciding which type of report

-writing information report

-writing evaluation report

-writing proposal and submission report

3.3 Gathering information

-choosing information

3.4 Writing the report;

-dividing the report into parts

- writing the report

- using footnotes, bibliography and references

-deciding material for the appendix

-using heading, subheadings, underlining and standout print.

3.5 Improve your writing skills;

-using some general tips

-choosing words

-using signpost words

-writing parallel phrases and subheadings.

MANAGEMENT SKILLS II

Economics and Business Management.

2 weeks/56 periods

Topics and Content

1.Production

-types of production

-production pyramid

1.1 Factors of production

1.1.1 Labour;

casual labour,

permanent labour

and technician

1.1.2 Land;

-quality and nearness to market

1.1.3 Capital;

-actual cash money

-availability of loan money

-assets

1.1.4 Management;

-land quality

-market potential

-geographic location

-transport availability

-labour availability

-finance agencies

2 Cost and return

fixed cost variable cost

-break even point

-gross margin

-return on investment

-return on output

-rate of return on assets employed

3.Budgeting

-cash flow statement

-cash flow budget

- partial budget

-gross margin

3.1 Marketing

-the whole seller

-direct marketing

-marketing boards

-direct market exports

-cooperatives

-marketing chain

-factors influencing marketing

-produce accounting

MANAGEMENT SKILLS III.

Feasibility studies and project evaluation.

2 weeks/56 periods.

Topic and Content

1. The Project
   - -definition
   - -availability of land
   - -benefit to the community
   - -marketing appraisal
   - -technical aspect
2. Planning appraisal and design
   - identification and formulation
   - feasibility analysis and appraisal design
3. Marketing appraisal
   - -definition of marketing
   - -reasons for market research
   - - market outlet
4. Management
   - -personal, knowledge and skills.
5. Economic viability
   - -socioeconomic cost-benefit analysis.

MANAGEMENT SKILLS IV.

LEADERSHIP AND MANAGEMENT.

3 weeks/84 hours.

Topic and Content.

Communication

-definition

-communication at place of work

-communication as a tools for management

-giving instruction

-communication barriers

Problem solving and decision making

-problem spiral

-systematic approach to problem solving

-decision making

-developing alternatives

Planning

-role of planning

-forecasting

-setting objectives

-programming and scheduling

-budgeting

-policy for development projects

Organisation

-responsibility

-authority

-accountability

-structuring

-integrating

-selection personnel needed

-developing personnel

Directing

- -definition
- -assigning of tasks
- -morale and motivation
- -leadership
- -communicating

Controlling

- -definition
- -preliminary control
- -concurrent control
- -feedback control
- -establishing standards
- -measuring performance
- -taking corrective actions

On the job training

- -who is responsible
- -when is training necessary
- -how is it done
- -methods
- -general principles
- -preparation and planning
- -presentation
- -measurements of effectiveness

Labour relations

- -labour regulations
- -labour management and supervision

APPENDIX 8:

P.C.D. COURSE OUTLINE.

Module I	Period 10 weeks overall. Periods/ course.
-Report writing.	-28 periods
-Management skills I (record keeping & introductory management)	-56periods
-Rural engineering skills I.	-56 periods
-Pig management.	-56 periods
-Land management.	-56 periods
Module II	Periods 10 weeks.
-Management skills II	-56 periods
-Rural engineering skills II	-56 periods
-Poultry production	-56 periods
-Crop management	-56 periods
-Nutrition	-56 periods
Module III	Periods 10 weeks.
-Management III	-56 periods
-Rural engineering III	-56 periods
-Plant production	-56 periods
-Animal health	-56 periods
Module IV	Periods 10 weeks.
-Management skills IV	-56 periods
-Rural engineering IV	-56 periods
-Cattle production	-56 periods
-Post harvest management	-56 periods
-Extension	-56 periods
-Option project report.	-224 period

REFERENCES

1. Skilbeck, M.(Ed.), (1984). Evaluating Curriculum in the Eighties. Hodder and Stoughton.

2. Saylor, G. J. and Alxeander, W. M.,(1974). Planning Curriculum For Schools. Holt,Rinehart and Winston Incorporation.

3. Kelly, A.V., (1989). The Curriculum. Theory and Practice. Paul Chapman Publishing LTD.

4. Davis, I., (1976). Objective in Curriculum Design. McGraw Hill Book Company.

5. Asher, W. J.,(1974). Educational Research and Evaluation Methods. Little Brown and Company.

6.Andrey and Nichollis, H.S.,(19). Developing a Curriculum, A Practical Guide. George Allen and Unwin.

7. Giroux, H. A., Penna, A. and Pinar, W. F., (1981). Curriculum and Instruction. McCutchan Publishing Corporation.

8. Kaufman, R. and English F. W.,(1979). Need Assessment, Concept and Applications. Educational Technology Publication. pp 53-64, 91-170

9.Malcolm, Skilbeck. (Ed.) (1984). Reading in School-based Curriculum Development. Harper and Row Publisher.

10. Abella K. T., (1986). Building Successful Training Program. Addison-Wesley Publishing Company Inc. pp 3-70

11. Sinnett, W. E., (1976). The Application of DACUM in Retraining and Post Secondary Curriculum Development. Humber College of Applied Art and Technilogy.

12 Torshen, K. P., (1977). The Mastery Approach to Competence- Based Education. Academic Press. pp 19-24, 103 - 134.

13. Rondinelli, D. A., (1977). Planning Development Projects. Dowden, Hulchragon Ross Inc. pp 69- 139

14. Randolph, W. A. and Posner, Z. P., (1987). Effective Project Planning and Management, Getting the Job Done. Prenlice Hall Inc.

15. Anstey, E., Fletcher, C., Walker, J., (1976). Staff Appraisal and Development. George Allen and Unwin Ltd. pp 15-25

16. Brandt, S. R. and et al, ed, (1980). Considered Action for Curriculum Improvements. PERP, Inc.

17. Adams, M. E.,(1982). Agricultural Extension in Developing Countries. Hustsmen Offset Printing Pty. Ltd. pp 7-21

18. Gephart, W. J. and Ingle, R. B., (1969). Educational Research. Charles, E. Merrell Publishing Company.

19. Clark, N., (1991). Managing Personal Learning and Change. McGrow Hill Book Company Ltd.

20. Silberman, M.,(1990). Active Training. University Associates Inc.

21. Lester, A., (1982). Project Planning and Control. Butterworth and Company (publishers) Ltd.

22. Cook, D. R., LaFleur, N. K., (1975). A Guide to Educational Research. Allyn and Bacon Inc.

23. Smith, P., (1984). Agrcultural Project Management. Elsevier Science Publishing Company, Inc.

24. Burleigh, A.R., (1986). The DACUM Trail and Other Intersection Path.

25. A Thesis by Ashcroft, E.R., (1987). An Evaluation of Traditional Staff Development Prcatice for Implementing Change in University Teaching. Massey University Print.

26. Mager, R.F. and Pipe, P., Sec. Ed., (1984). Analyzing Performance Problems. Davide S. Lake Publisher. pp 5- 53

27. Densley, D.R.J., (1978). Agriculture in the Economy. Department of Primary Industry Publication, PNG. pp 3-9

28. Randolph, W. A. and Posner, Z.P., (1992). Getting The Job Done! Managing Project Team and Tasks, Terms for Success. Prenlice Hall Inc.

29. Department of Agriculture and Livestock Publication, (1988). Small Holder Access and Food Supply Project. PNG Government Printer.

30. Department of Agriculture and Livestock Publication, (1987). Five Year commodity Investment Programme and Minor Crops Expansion and Diversification Project. PNG Government Printer.

31. Department of Agriculture and Livestock Publication, (1989). The Medium Term Development Strategy for the Renewable Resources Sector, 190-1994. PNG Govrnment Printer. pp 5-44

32. Department of Agriculture and Livestock publication, (1991). Annual Report of the Minor Crops Expansion and Diversification Project for 1990-1991. PNG Government Printer.

34. Department of Agriculture and Livestock Publication, (1989). The Medium Term Development Strategy for the Agricultural Sub-Sector, 1990-1994. PNG Government Printer pp 5-8

35. Clifton, D., S. Jr., Fyffe, D.,E., (1977). Project Feasibility Studies. A guide to Profitable New Veture. John Wiley and Sons LTD. pp 34-178, 267-289