MPUMALANGA AGRICULTURAL EDUCATION AND TRAINING REPORT

DEPARTMENT OF AGRICULTURE, CONSERVATION AND ENVIRONMENT

PROJECT: NATIONAL STRATEGY ON EDUCATION AND TRAINING FOR AGRICULTURE AND RURAL DEVELOPMENT

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ABBREVIATIONS AND ACRONYMS

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<thead>
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<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABET</td>
<td>Adult Basic Education and Training</td>
</tr>
<tr>
<td>AET</td>
<td>Agricultural Education and Training</td>
</tr>
<tr>
<td>AETI's</td>
<td>Agricultural Education and Training Institutions</td>
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<td>C2005</td>
<td>Curriculum 2005</td>
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<td>National Strategy Formulation Team</td>
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<tr>
<td>PAETTT</td>
<td>provincial Agricultural Education and Training Task Team</td>
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<td>OBE</td>
<td>Outcomes Based Education</td>
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ACKNOWLEDGEMENTS

Special appreciation and acknowledgement goes to the following organizations that contributed to the development of this report:

- National Department of Agriculture (Human Resource Development) for taking initiatives, doing all administration issues that were necessary for establishment of this project and facilitating of all the project activities.
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- Department of Agriculture, Conservation & Environment for the support given to the Provincial Research Officers with necessary resources to undertake their task and for their encouragement.
- Lowveld College of Agriculture and Non-Formal Training in Eastvaal Region for releasing two officials from their responsibilities to serve full-time as Provincial Research Officers on this project for the past ten months.
- Provincial Agricultural Education and Training Task Team for their assistance and advice in data collection and analysis process.
- Agricultural Education and Training Stakeholders that include Department of Education, Department of Correctional Services, Non-Governmental Organizations, Parastatals, Private Companies, Farmer Organizations and Unions, who sacrificed their time to the complete the questionnaires.
Mpumalanga has a high unemployment rate of 32.9% with economic active population amongst those aged 15-65 years old. Unemployment may lead to lack of fulfilment of basic needs, poverty and exposure to crime. The central challenge for agriculture in poverty alleviation and food security for the rural population, is to contribute to improved livelihoods and employment. Strategies to combat unemployment include job creation and skills training. Understanding the role of training in poverty alleviation and job creation of the Directorate: Human Resource Development in the National Department of Agriculture was given the task of formulating a strategic vision for Agricultural Education and Training (AET). A project on a National Strategy on Education and Training for Agriculture and Rural Development was initiated.

This study was initiated to develop an Agricultural Education and Training Strategy. The process of strategy development consists of three phases, namely analysis, planning and implementation. To develop a well-founded national Strategy for AET there is a need to gather information relating to labour market, training needs, relevance and performance of the AET system to meet the market needs. This report was written by the Provincial Research Officers to inform AET Strategy development through the findings from different Agricultural Education and Training stakeholders. AET stakeholders were involved in identifying needs, set priorities and making recommendations for the AET for the Province. The Provincial findings will be brought together into a National Forum where priorities for the national strategy can be developed. A strategy that recognises differences between provinces will then be drawn up.
EXECUTIVE SUMMARY

Mpumalanga is situated in the Eastern part of South Africa. It is divided into three administrative regions, namely Eastvaal, Ehlanzeni and Nkangala. Nelspruit is the provincial capital. The topography of Mpumalanga can be split into three broad zones, namely Highveld, Escarpment and Lowveld.

Mpumalanga lies in the summer rainfall area and the climate varies due to changes in altitude. Arable land covers approximately 23.8% of Mpumalanga. The Eastvaal and Nkangala regions are main producers of field crops, whilst Ehlanzeni is an import source of winter vegetables. Animal products are the second largest generator of gross income from agriculture within the province. Natural grazing covers approximately 13.6% of Mpumalanga. Commercial forest plantations cover more than 10% of Mpumalanga.

Education and Training needs for Agricultural and Rural Development was based on a training need analysis process that is divided into three phases, namely job, task and knowledge, and skills gap analysis. The training needs of the farmers are mainly on business issues and field crop production. The preferred training provider for subsistence farmers is the Government Institutions. Training needs for extension and training officers, are computer courses and production issue courses. The preferred training provider for extension and training officers is the Government Institutions. Training needs for managers are mainly on administration and management issues and the preferred training provider being the private companies.

Agricultural Education and Training (AET) is provided by formal education institutions, namely schools and tertiary institutions. Agricultural schools offer agriculture and other schools offer agriculture as a school subject. There is only one tertiary institution, namely Lowveld College of Agriculture, offering agriculture in Mpumalanga. The College offers a two year higher certificate in plant production. There are other Agricultural Education and Training Institutions (AETI’s) offering non-formal training in agriculture which includes Non-Governmental Organizations, Parastatals, private companies, Department of Correctional Services and Department of Agriculture, Conservation and Environment. Training courses offered by these institutions include plant production, animal production, soil science, wool production, business management, farm management and adult basic education and training.

Training gaps were identified in the training programme of AETI’s that include training on hydroponics, appropriate technology and indigenous knowledge. Gaps in the training system include lack of co-ordination between different agricultural education and training institutions. Agricultural education and training institution’s programmes are not accredited as they provide only certificates of attendance to the trainees. There is an after-care program and evaluation after training to provide justification for the budget of policy-makers and other public organizations. There is also a need to develop a training programme that will address the identified training needs. There is a lack of
training resource and facilities as well as facilities for disabled people in AETI’s. There is a need to expand and upgrade training facilities. For training to be a powerful tool in poverty alleviation and job creation it is essential that the identified gaps be addressed by the national strategy on AET. To improve the efficiency of training, recommendations were made towards formulation of the AET Strategy. Training must focus on affordable technologies and cultural practices also, to be appropriate for resource poor farmers. Research and training linkages are indispensable for development and diffusion of appropriate technology that is economically, environmentally and socially acceptable. It has to, if necessary, equip the Department of Agriculture’s training centres and provide necessary training materials to the trainers to enable them to offer practical training to farmers.

Training needs to be problem focussed and technology orientated. It must be demand driven, action-based experience and keep up with new technologies, i.e. adapt to rapid technological development and global structural change on global scale. Training methods should include formal presentation, demonstration, informal discussion and opportunities to try out new knowledge and skills in the field. Training for small-scale farmers should focus on production issues, marketing, financial management, farm management and conflict management. Marketing courses should incorporate identification of marketing channels and risk management strategies as training content. An incentive system needs to be developed to give recognition for training successfully completed. Department of Agriculture needs to link training programmes with other small-scale farmer support programmes. AETI’s need to provide a well-documented after care programme to farmers.
CHAPTER 1: INTRODUCTION

1.1 Background

Mpumalanga has a high unemployment rate of 32.9% with economic active population amongst those aged 15-65 years. Majorities of the people are poor and have no land. There is a high percentage of children and that means the dependency burden on each wage earner is great. Losing a job or having no job is seen as falling into poverty. According to Krige (1989) unemployment may lead to poverty, lack of fulfillment and exposure to crime because employment is a prerequisite to assessing other basic needs. The challenge for agriculture is to increase productivity in a sustainable manner in order to meet increasing food demand caused by a growing population. Increased agricultural production will reduce poverty, generate income and alleviate employment. Presently the contribution to employment by the agricultural sector in Mpumalanga is 21.2% (Agricultural Potential Report, 1998). Strategies to combat unemployment include job creation and skills training, therefore it is essential to invest in people by broadening access to Agricultural Education and Training (AET) as this provides skilled manpower for the economic sector. The main training objective is to equip people with knowledge and skills relevant to economic performance.

Agricultural Education and Training (AET) is indispensable to the empowerment process. An untrained farm worker or farmer is a potential danger to himself, to the industry and the final consumer. The legal implications of using untrained workers to handle hazardous materials can result in a big financial burden. It is therefore imperative that all people involved in agriculture, be fully trained for the task. Understanding the role of training in poverty alleviation and job creation, Directorate: Human Resource Development in the National Department of Agriculture (NDA) was given the task of formulating a strategic vision for the AET. To put forward the policy proposals that will ensure development of a well-planned and integrated human capital development programme, NDA in line with other Government department in South Africa requested assistance from Food and Agriculture Organization in developing an appropriate AET Strategy through capacity building of NDA and nine Provincial Departments of Agriculture staff. A project on the National Strategy on Education and Training for Agriculture in Rural Development was initiated. The purpose of the project was to develop a sustainable methodology for a National Strategy on Education and Training for Agriculture and Rural Development, which will ensure a maximum participation of all relevant stakeholders and which builds the capacity of the staff in the National and nine Provincial Departments of Agriculture. Two officials were nominated from each province to be Provincial Research Officers (PRO’s) and two senior officials were nominated to be members of the National Strategy Formulation Team (NSFT).
1.2 Purpose of the report

“The central challenge for agriculture in poverty alleviation and food security for the rural population is therefore to contribute to improved livelihoods and employment” (Agricultural Policy in SA 1998). To achieve improved livelihoods there is a need to broaden access to AET. It is essential that we offer people in the agricultural industry the opportunity to gain knowledge and skills that will ensure that our products reach the market in the acceptable form. Equipping of farmers and agriculturists with necessary skills and technical knowledge provides a serious challenge for education in South Africa (Kirsten, 1997). The overall objective of the report is to inform the AET Strategy through the findings from relevant AET stakeholders. Information relating to employment trends, labour market, training needs, training gaps and provision of training from different users and providers of AET was gathered. Using the findings of the research, priorities and recommendations for the AET for the Province were stated.

1.3 Methodology

1.3.1 Provincial Agricultural Education and Training Task Team (PAETTT)

To ensure maximum participation of all relevant stakeholders at different levels of the AET system, including schools, small-scale farmers and other providers of AET a workshop was organized for all the stakeholders in Nelspruit on 27 February 2002. The purpose of the workshop was to inform the participants about the project and establish PAETTT. PAETTT members were nominated and they were informed about their role in strategy developments. The total number of participants was 47 and PAETTT consisted of 12 members.

Two PAETTT meetings were held. The first one was held on 3 March 2002 with the purpose of contributing to the questionnaires designed by PRO’s for different users and providers of AET. The second PAETTT meeting was held on 5 September 2002 to report on data collection, analysis process and to discuss the draft structure of the provincial AET report. The last provincial workshop was held on 30 October 2002. Stakeholders involved in AET reviewed the findings presented in a report of the research carried out by the PRO’s.

1.3.2 Data collecting instruments

Data collecting instrument was determined by the objectives of the study together with respondents from whom data was needed. Three data collecting instruments were used, namely questionnaires, structured interviews and checklists. Interviews were conducted with small-scale farmers using checklists to gather information from them, since some of them could not read nor write. Participatory appraisal
tools were used in determining training needs and prioritising them. Questionnaires were distributed to other stakeholders who could read and write.

1.3.2.1 Formats of the questions

Two basic formats were used in the study, namely structured (close questions) and unstructured (open questions). Structured questions contained categories of response from which the respondent chose the category that was appropriate for him, e.g. age. Unstructured questions encouraged respondents to express his/her response freely since this was a social study aimed at getting people’s opinions and attitudes about the AET Strategy.

1.3.2.2 Types of questions used in the study

- Factual questions were used to obtain demographic and personal information from respondents.
- Questions on opinions and attitudes were used to obtain ideas and values about the AET Strategy.

1.3.3 Sampling

To draw a representative sample that would be a true image of the population, we considered the following aspects:

- Geographic spread – a sample was drawn to cover a wide range of geographic areas.
- Adequate number – availability of each AET provider and user in a particular area determined the number of respondents selected to be part of the sample, e.g. numbers of schools offering agriculture in a particular area.

The sample was selected by the PRO’s instead of waiting for people to come forward to be interviewed and to avoid hearing only from people who feel strongly about AET issues, ignoring the feelings of the majority. Probability sampling procedures were used, so that each element of the population had a positive probability of being drawn as an element of the sample.

Time and cost determined the sample size. Sample size for schools was 75 schools in the province with 25 schools in each of the 3 regions. Sample size for Department of Agriculture was 300 officials. 7 Correctional Service, 600 subsistence farmers and 300 commercial farmers in the province. All Agricultural Education and Training Institutions (AETI's) and private companies were included to be part of the sample because they were few. (See appendix for institutions visited to contribute to the AET Strategy through questionnaires and interviews).
Categories of respondents are as follows:

- Subsistence farmers
- Commercial farmers
- Agricultural students
- Agricultural teachers
- Research institutions
- Principals of agricultural schools
- Principals of schools offering agriculture as a subject.
- Formal agricultural education and training institutions
- Informal agricultural education and training institutions
- Managers of agricultural education and training institutions
- Department of Agriculture, Conservation and Environment staff.

1.3.4 Data analysis procedures

Two data analysis methods were used, namely quantitative and qualitative.

1.3.4.1 Quantitative data analysis

The following steps were followed:

- Develop a codebook
- Prepare a data set sheet
- Enter the data
- Examination of data
- Statistic data analysis

1.3.4.2 Qualitative data analysis

- Identify specific words, themes and statements
- Extract recurring themes
- Code them into separate categories
- Do frequency analysis
- Organize data into graphs for drawing conclusions

1.4 Outline of the report

The report is organized into seven chapters including the introduction:

- Chapter 2 is an overview of the province with regard to area, population, agricultural activities and agricultural education and training.
- Chapter 3 is based on the findings on the study about characteristics of respondents with regard to age, gender, population and agricultural activities and their socio-economic profile.
- Chapter 4 is based on training need analysis. It determines knowledge and skills requirements and performance deficiencies.
- Chapter 5 is based on the providers of the AET in the province. It involves institutions offering formal and non-formal training in agriculture. It looks at programmes offered, targeted clients, cost of training and methods of training of these AET institutions.
- Chapter 6 determines the gaps in AET by analysing training provided by AETI's and what is required. It also considers the market needs, rapid technology development and global issues such as sustainable development. Assessment of training required is based on training needs and on training capabilities of AETI's
- Chapter 7 is based on the recommendations made by providers and users of AET towards the formulation of the national AET Strategy.
CHAPTER: 2: OVERVIEW OF AN AGRICULTURAL/RURAL SECTOR IN
MPUMALANGA

2.1 Introduction

Mpumalanga Province is situated in the eastern part of South Africa. Mozambique and Swaziland border it in the east, Gauteng in the West, Limpopo in the north, Free State and Kwazulu-Natal in the South.

2.2 Geographic/Environmental features

The Mpumalanga Province with its capital Nelspruit occupies an area of 78,370 km² or 6.4% of the total area of South Africa. Its geographical area size in hectare is 7,942,744. The area has a well-developed network of roads and railways, making it highly accessible. Approximately 3 million people live in the province, which accounts for 7% of the total RSA population. It has a gross geographic product of over 28 billion, which is 8.1% of South Africa.

Mpumalanga is mainly situated on the high plateau grassland known as Highveld. The Highveld stretches for hundreds of kilometres eastwards, until it rises towards mountain peaks and deep valleys of the Escarpment in the north-east. From the escarpment it plunges hundreds of meters down to the low-lying area known as Lowveld.

The climate of Mpumalanga is as diverse as the other natural resources. This is a summer-rainfall area divided by the escarpment into the Highveld with cold frosty winters and moderate summers and the Lowveld with mild winters and subtropical climate. During winter the Highveld and Escarpment sometimes experience snow. The annual rainfall occurs mainly during summer in the form of heavy thunderstorms.

The diverse climate in the province makes the production of a wide variety of crops possible. The Lowveld is renowned for citrus and subtropical fruits, whilst the Highveld produces much of the summer grains, such as maize and grain sorghum. Exotic trees, plantations such as gum and wattles cover most of the hills on the Escarpment.

Gographically, in Mpumalanga the Basement Complex is found in the Lowveld as scattered patches in the Southern Highveld. The stratum consists of various rocks such as dolerite, granite gabbro, gneiss, norite, tuff and shale. The Barberton Supergroup represents the greenstone belts in Mpumalanga. The greenstone is economically important, hence hosting many gold, antimony, copper-zinc, iron, asbestos, talc, mercury, magnesite and gemstone deposits. The Barberton mountain land is the most significant gold-producing greenstone belt in South Africa. A small patch of the Murchison Supergroup is found in the northern part of the Kruger National Park.
and is a source of antimony. Rocks in this stratum include lava and schist. The Pongola Supergroup is found in the Piet Retief and eastern part of the Ermelo districts. This stratum was deposited during the same time period and hosts gold, though at lower a concentration. Rocks in this stratum include basalt, andesite, quartzite, shale and hornfels. The Veltersdorp Supergroup is found in the Balfour area and small patches in the western part of Standerton district. Rocks found in this stratum include andesite and tuff. The Bushveld complex has intruded the Transvaal Supergroup sediments about 2050 million years ago. The complex covers the northern part of the northern Highveld. Its economic value is the significant resources of chrome, platinum, cobalt, copper, nickel, vanadium, tin, black norite, red syenite, uranium, gold, silver, vermiculite and merchant grade phosphate (apatite).

The soil covers red soil which occupies about 18.7%, yellow soil 0.9%, vertic and melanic cover 17.7% while pedologically young soil covers 22.0% and exposed rock 6.9%. Generally, loam soil covers 65%, sandy soil taking 21.4% whereas clay soil remains with only 12.8%.

The water resources in Mpumalanga are mainly from the following rivers: Olifants, Vaal, Tugela, Mfolozi and Crocodile/Komati.

Steel, vanadium, coal and gold are some of the mining exports of the province. It produces a large quantity of the exotic timber in South Africa.

2.3 **Demographic features (numbers and types of farmers/rural population)**

Mpumalanga has a total population of 2 800 711. The African group makes up 89.2% of the Mpumalanga population. There are more females (51.4%) than males (48.6%).

Mpumalanga has approximately 4 675 commercial farming units which makes it the second smallest compared to other provinces. However, it has a total of 101 051 farm workers. Job creation in the farming industry is therefore important in Mpumalanga. The Province has various categories of farmers ranging from subsistence farming to commercial farming. Most of the commercial farmers and/or developed farmers in the province are white farmers while most of the subsistence and/or developing farmers are Black. Mpumalanga has a non-urban population of 1 706 425. This implies that this province is slightly less urbanized with its urban population of 1 094 287. More females are currently involved in farming activities than males.
2.4 Description of study area

2.4.1 Much more of the information about the description of the Mpumalanga has been said in Chapter two above (especially 2.2 and 2.3 of chapter 2).

2.4.2 The following table is a summary of the location and profile of the respondents of Mpumalanga (percentage).

<table>
<thead>
<tr>
<th>Providers/Users</th>
<th>Location</th>
<th>Age</th>
<th>Gender</th>
<th>Population group</th>
<th>Educational level</th>
<th>Farming Period</th>
<th>Enterprise or specialisation</th>
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<tr>
<td>Developed Commercial Number of participants: 75</td>
<td>1 = 72</td>
<td>&lt;45 = 53</td>
<td>M = 64</td>
<td>White = 65</td>
<td>Degree = 19</td>
<td>&gt;6 years = 83</td>
<td>Sugarcane</td>
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<td></td>
<td>2 = 11</td>
<td>&gt;45 = 47</td>
<td>F = 36</td>
<td>Black = 35</td>
<td>Diploma Certificate = 33</td>
<td>&lt;6 years = 17</td>
<td>Citrus</td>
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<tr>
<td></td>
<td>3 = 17</td>
<td></td>
<td></td>
<td>No Indian</td>
<td>Grade 12 = 24</td>
<td></td>
<td>Wheat</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No Coloured</td>
<td>Less than Gr 12 = 24</td>
<td></td>
<td>Subtropical</td>
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<tr>
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<td>&lt;45 = 30</td>
<td>M = 23</td>
<td>White = 18</td>
<td>No Degree</td>
<td>&gt;6 years = 83</td>
<td>Poultry</td>
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<td></td>
<td>2 = 48</td>
<td>&gt;45 = 33</td>
<td>F = 77</td>
<td>Black = 82</td>
<td>Diploma Certificate = 18</td>
<td>&lt;6 years = 84</td>
<td>Vegetables</td>
</tr>
<tr>
<td></td>
<td>3 = 37</td>
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<td>Gr 12 = 37</td>
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<td>Maize</td>
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<td></td>
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<td>Less than Gr 12 = 42</td>
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<td>&gt;45 = 33</td>
<td>F = 41</td>
<td>Black = 32</td>
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<td>&lt;6 years = 34</td>
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<td></td>
<td>3 = 15</td>
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</tbody>
</table>

Region: 1 = Nhlanzeni 2 = Eastvaal 3 = Nkangala
2.5 Conclusion/Summary

2.5.1 Developed, commercial or large-scale farming

2.5.1.1 Location of commercial or developed farming

Commercial farmers are widespread in the province of Mpumalanga. However, there are more commercial farmers in the Nhlanzeni region where agriculture is more intensive, because of more favourable climatic conditions for farming in Nhlanzeni region as compared to other regions.

![Location of Commercial or Developed Farming](chart1.png)

2.5.1.2 Population Groups: Commercial Farmers

![Population Groups](chart2.png)
2.5.1.3 Age range of commercial farmers

Most of the farmers are still less than 45 years old. However, it must be indicated that the age gap in between is very small. There is therefore a need for young farmers to join the farming community and that the subsistence or small-scale farmers be developed in order to join the commercial farming sector.

![Age Range of Commercial Farmers Diagram]

2.5.1.4 Gender of commercial farmers

This community is yet predominantly male. However, there is a slight improvement from the female farming community more especially in the cane growing community. This information can be observed in the diagram below.

![Gender Distribution Diagram]
2.5.1.5 Educational level/qualification of commercial farmers

Most of the commercial farmers are presently from the white community. This could be Black people not having land for farming during the apartheid era. However, the 35 per cent of the Black community in the farming industry may improve. Most of the commercial farmers have more than 6 years farming experience.

![Bar chart showing educational levels of commercial farmers]

The commercial farming sector specializes in a variety of enterprises, e.g. cattle, wheat, citrus, sugarcane, subtropical, tropical, poultry, vegetables. Maize, piggery, dairy and cotton.

2.5.2 Subsistence small-scale farmers

2.5.2.1 Location of developing subsistence small-scale farmers

These respondents in this group were mainly from the Eastvaal region, followed by the Nkangala region and Ehlanzeni region. They are found in the rural areas normally working (less frequently as individuals) in groups or at clubs, e.g. women clubs. Most of the developing farmers are old people or pensioners. Some of them are helping their children to develop. Some work in family farming ventures. However, this is usually practised in the white farming community.
2.5.2.2 Gender and age range of subsistence farmers

Many of these farmers are old Black ladies (77%), who are already pensioners. There are few old male farmers in this category of the farming community. (Refer to the two tables below)
2.5.2.3 Population group of subsistence farmers

There are few White farmers found in this category of the farming community. They comprise only of 18 percent of the subsistence farming community. Refer to the diagram below.

2.5.2.4 Educational level of subsistence farmers

Farmers in the subsistence group have lower academic qualifications. Their educational levels range from less than grade 12 certificates or diplomas. This information can be observed in the diagram below.

Some of these farmers are participants in the LRAD programme. Their farming experience is far less than 6 years. They are concentrating on vegetables, maize, poultry and lemon and have problems with marketing. They are depending on street markets in most cases.
2.5.2 Service providers

2.5.3.1 Location of service providers

The service providers in the province are spread across the province. According to the findings, many service providers are concentrated in the Nhlanzeni region. Access to facilities and technology development might be more easy in this region.

![Location of Service Providers Graph](image)

2.5.3.2 Age range of service providers

Most of the service providers are less than 45 years old which gives hope that they will still service the province for the next 10 to 15 years. Refer to the figure below.

![Age Range of Service Providers Graph](image)

2.5.3.3 Gender of service providers

Most of the service providers (68%) are White males. This information is displayed in the two figures below.
2.5.3.4 Educational level of service providers

Service provision implies being educated. It has been found that most of the service providers are academically well educated and client orientated. However, there are those who are still rendering the service to the public without any post-matric qualifications. Refer to the figure below.
2.6 Agricultural activities (sectors, land use, contribution to GDP)

The agricultural activities in Mpumalanga range from small vegetable gardens to commercial farming, both rain fed and irrigation. Farming activities include wood production, field crops production (summer cereals, winter cereals, oil seeds, legumes, fodder crops). The horticultural crops include vegetables, citrus, subtropical fruit, deciduous fruit. The livestock enterprises include cattle, sheep, goats, pigs, horses, donkeys, as well as poultry.

The cultivated permanent commercial rain fed areas cover approximately 13,9% of the area of Mpumalanga, while cultivate irrigated land covers only 1,7%. Sugarcane covers approximately 0,6% of land in the province. The cultivated temporary semi-commercial and or subsistence rainfed farming covers only 1,2% of the total area in the province. A very large area (41%) is covered by unimproved grassland. Forest, woodland and plantation cover approximately 26,9% of the province. Degraded, i.e. forest and woodland, thicket and bushland, unimproved grassland as well as donga’s, sheet and erosion scars cover 1,9% of the area. Water bodies and wetlands cover a further 0,6% of the province.

“The land is also utilized for mines and quarries, built-up land for commercial purposes, built-up land for industrial, transport, residential purposes mainly in the urban areas” (Resource Information Report: Mpumalanga, 2002).
2.7 Non-agricultural activities (of farmers/rural households)

The non-agricultural activities in the province include sewing, knitting, brick-making, art and pottery, especially beading. This is mostly done by ladies. However, there is a bit of leather-work which is usually practised by men.

People of Mpumalanga are involved in various sports activities. Preferred sport varies with different population groups.

2.8 Agricultural education and training in the province

Agricultural education and training in Mpumalanga could be divided into two main categories, viz formal and non-formal training. The formal training ranges from primary education to tertiary education. Agriculture is being offered now under Natural Sciences in accordance with Curriculum 2005 (Outcome Based Education) at primary education level.

Secondary education in agriculture is being offered at secondary schools. The secondary schools could be divided into Agricultural Secondary/High schools and General Secondary/High schools. Agricultural secondary schools concentrate mainly on agricultural activities and other sciences and/or economic subjects. Agricultural science is however one of the compulsory schools subjects. General agricultural schools offer different streams of school subjects. Here agricultural science is one of the school subjects but not compulsory. There are approximately 204 secondary schools offering agricultural science as a school subject.

Only the Lowveld College of Agriculture is offering tertiary agricultural education in the province. This college admits less than 150 students per annum. It offers certificates and diplomas in plant production and extension. The college targets those people who have successfully completed grade twelve.

Non-formal training is being offered by various institutions within the province. These include private institutions such as Co-operatives, the Agricultural Research Council (ARC), Citrus Research International (CRI) and Intervet. The ARC and Mpumalanga Regional Training Trust are parastatals. They offer training by means of workshops and/or short courses. Mtimba College and Buhle College offer training mainly for those people who are already farming or ready to commence with farming.

There are consultants who help in training farmers in specific aspects such as farm management. One of these companies is a Multi-Disciplinary Development Agent (Marc-Dev) in Nelspruit. Transvaal Sugar Milling Company commonly known as TSB is offering training
mainly for the sugarcane farmers in the province. Non-Governmental Organizations are also involved in training farmers in the province, this includes amongst others, TRAC-MP.

The Department of Agriculture, Conservation and Environment offers training through its non-formal training centres in the province, such as Mzinti, Barberton, Malekutu and Funda Mlimi as well as Hazyview/White River. The Department of Correctional Services is involved in offering agricultural education and training mainly for the inmates.

2.9 Challenges and implications of development needs on Agricultural Education and Training

The literacy level of the farmers in the province is still very low. Most of the farmers in the province are older people rather than pensioners. This could be observed especially with the developing or small scale farmers. However, this is slightly different when we look at the commercial farmers who are mostly in their middle age.

There is a shortage of facilities for training farmers in the province, particularly for facilities in the rural areas where developing farmers could be trained close to their residences. It is clear that most of the farmers are interested in practical training rather than theoretical training. The LRAD programme seems not to have the desired result. Participants who have been given land are left without proper training on farming. These people have mostly a limited knowledge about farming. It goes without saying that there is a need for proper training of these people and that they cannot rely on their so-called indigenous knowledge due to challenges posed by new technology.

2.10 Conclusion summary

Mpumalanga is one of the agriculturally rich provinces with so many commercial farming units. There is a strong interest of women in the province joining the farming community. However, there is a need for support in various ways, like in finance and business management. LRAD should be coupled with agricultural education whereby the beneficiaries would be equipped with the necessary farming skills and applicable knowledge. There are some farms, which have been abandoned because people who have been given the land are failing to make a living out of farming. The land has been abandoned because of the internal conflicts, crimes, and lack of agricultural education on farming skills and applicable knowledge. There must be some after care programmes where people have been trained for some skills and knowledge. This could be helpful especially where training has been offered by Non-Governmental Organisations.
CHAPTER 3: EDUCATION AND TRAINING NEEDS FOR AGRICULTURAL AND RURAL DEVELOPMENT

3.1 Introduction

Effective training starts with the identification of training needs. “Training need is a condition where there is a gap between “what is” and “what should be” in terms of incumbents’ knowledge, skills, attitudes and behaviour for a particular situation of one point in time. The gap usually occurs when a difference exists between “desired performance” and “actual performance”.

Training analysis process can be divided into three phases namely, job analysis, task analysis and knowledge and skills-gap analysis.

- **Job analysis**: It involves the task identification of a particular job (Wentling, 1992). It is a method of determining major areas of tasks where training may be needed.

- **Task analysis**: The output of the job analysis is a list of job tasks and each task is a complex set of procedures in itself. Task analysis involves breaking down and analysis of important job tasks in order to determine specific segments of the task that is critical to the training programme.

- **Knowledge and skills-gap analysis**: It determines how skilled an individual is in relation to the important tasks and how much he/she differs from desired performance.

Training needs identification make it possible to design a training programme that will address the identified training problem or need. The sequence of tasks provides the sequence of training activities.

3.2 Knowledge and skills needs of farmers

According to Sebotja (DBSA 1997:38) in South Africa farmers are divided into two broader categories according to their access to the two major factors viz land and capital. The two categories are commercial and subsistence farmers. Commercial farmers have access to production factors to farm effectively. They own or lease land with good productive potential and economic value. They have access to production inputs through co-operatives and private input suppliers. They have access to agricultural credit from Landbank, Commercial banks and Co-operatives. They have access to markets and marketing infra-structure.
The category for subsistence farmers includes emerging, aspiring farmers and prospective farmers, e.g. beneficiaries of the Land Reform Programme. Majority of them do not own land. They have limited access to production inputs and do not belong to any viable co-operatives. They have difficulties in acquiring agricultural credit from Land Bank, Commercial banks and co-operatives. Markets and marketing infra-structure are usually limiting.

3.2.1 Subsistence farmers

3.2.1.1 Activities

Subsistence farmers dominate the agricultural sector in Mpumalanga. Large numbers of people involved in farming are women who have experience in farming. They are of middle age to older and they are semi-literate. 23 groups were interviewed. 48% of groups interviewed have both crops and livestock as enterprises. Agricultural practices are a mixture between crop and animal production.

Farming systems are based on rain fed arable crop production except vegetable production. Crop production is the largest sub-sector in agriculture followed by non-crop production, namely livestock production and forestry. The main vegetable crops produced are beetroot, cabbage, carrots, onions, spinach and pumpkin. Field crops grown include sorghum, potatoes and mono-cropping of maize. The main activities of the farmer are:

- Organize inputs for production
- Plant and manage crops using different practices
- Transport and market produce
- Keep financial record for enterprises

In general activities of subsistence farmers include resource development, e.g. obtaining necessary infra-structure such as irrigation systems, agricultural activities such as production of a particular commodity and marketing activities. The majority of the farmers interviewed are experiencing three problems in their farming activities, namely:

- Lack of irrigation facilities
- Limited resources
- Human related problems such as theft and conflict among group members
Farmers use water from the nearby rivers to irrigate their crops. Some water is pumped into reservoirs. Farmers then use watering cans to collect water for irrigation. This wastes time and demands energetic people to irrigate the average of one hectare vegetable garden. The other problems is that rivers sometimes run dry leaving farmers without water to irrigate their crops. Operation and maintenance of irrigation systems is poor and this poses a serious problem in agricultural development. Provision of technical and financial assistance for building of irrigation systems for resource poor farmers, will play an important role in increasing production and promoting poverty alleviation.

### 3.2.1.2 Skills required to undertake activities

There are three broad categories of skills required in farming business namely: crop production, livestock production and general skills.

<table>
<thead>
<tr>
<th>Crop production skills</th>
<th>Livestock production skills</th>
<th>Other skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetic (improved varieties)</td>
<td>Genetics (breed improvement)</td>
<td>Marketing</td>
</tr>
<tr>
<td>Crop production skills</td>
<td>Animal health practices</td>
<td>Farming systems</td>
</tr>
<tr>
<td>Crop management practices</td>
<td>Livestock management</td>
<td>Farm mechanization</td>
</tr>
<tr>
<td>Soil and water management practices</td>
<td>Forage or range management</td>
<td>Financial management</td>
</tr>
<tr>
<td>Cropping systems</td>
<td>Post harvest technology</td>
<td>Farm management</td>
</tr>
<tr>
<td>Post harvest technology</td>
<td>Soil and water management practices</td>
<td></td>
</tr>
<tr>
<td>Crop protection</td>
<td>Indigenous knowledge</td>
<td></td>
</tr>
<tr>
<td>Indigenous knowledge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are different skills required by farmers to perform their farming activities. Skills required are linked to their farming enterprises. Different types of farming technology cannot be fully exploited without having a complementary set of management practices, e.g. improved breeds require higher levels of management like improved nutrition and preventative health hygiene. The farmer therefore needs all these skills to be productive. Training will assist small entrepreneurs to become efficient and expand their activities. Subsistence farmers need to take control over the means of production so that they can produce more then they can consume in order to sell.
3.2.1.3 Existing knowledge and skills (courses/sessions)

90% of the groups interviewed attended training mainly on animal and crop production issues, 6% on other issues and 4% of the groups interviewed never attended any training courses. Subsistence farmers receive little business skills training. Farmers receiving loans from Landbank for farming purposes, need to be trained in business issues. This will enable them to manage the money wisely and repay their loans. Farmers failed to implement knowledge and skills gained during training for the following reasons:

- Other inputs are not available locally, e.g. recommended seed cultivars
- Lack of implements at planting time affecting the planting time
- Other inputs like herbicides are sold in bulk that become too expensive for an individual
- Lack of co-operation among group members on farming activities
- Lack of after-care and support from extension officers during implementation of those activities.

The training that is offered is not based on the needs of these farmers. Training should be based on local problems and provide local solutions by using technologies that are locally adapted, efficient and maintained by local people. AET’s need to develop the capacity of responding to the needs of the farmers and changes in the farming environment.

3.2.1.4 Skills gap and training needs for subsistence farmers

The following table gives the number of respondents needing the indicated training courses:

<table>
<thead>
<tr>
<th>Training Course</th>
<th>Individual (N = 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business management</td>
<td>204</td>
</tr>
<tr>
<td>Field crops</td>
<td>201</td>
</tr>
<tr>
<td>Vegetable production</td>
<td>194</td>
</tr>
<tr>
<td>Small stock production</td>
<td>191</td>
</tr>
<tr>
<td>Occupational health and safety</td>
<td>153</td>
</tr>
<tr>
<td>Human management</td>
<td>85</td>
</tr>
<tr>
<td>Technical</td>
<td>82</td>
</tr>
<tr>
<td>Sewing</td>
<td>60</td>
</tr>
<tr>
<td>Cookery</td>
<td>41</td>
</tr>
<tr>
<td>Large stock production</td>
<td>40</td>
</tr>
<tr>
<td>Others</td>
<td>32</td>
</tr>
</tbody>
</table>

The main training need for subsistence farmers is on **business issues** namely marketing and financial management. Subsistence farmers are experiencing market-related problems like lack of market information, lack of storage facilities and lack of technical know-how on packing and grading. Hawkers are taking advantage of this situation
by negotiating a low gate price. Marketing is a development tool therefore training should provide marketing information, marketing strategies and risk management strategies for small-scale farmers. It is necessary that farmers be training on business concepts such as productivity, profit and return on investment, etc.

Farmers also need training on **production issues** to improve their productivity and commitment to farming. Training needs on animal production include a bee-keeping course. Training in the following technology is essential for farmers to increase production:

- Marketing
- Improved cultivars
- Pest management
- Soil and crop management practices

“Farmers then, require knowledge about new inputs, new techniques of production and how to economize in production and marketing” (Wharton 1965).

### 3.2.1.5 Preferred training providers

The following training providers are preferred by the indicated number of group respondents. The reasons for the preference are indicated.

<table>
<thead>
<tr>
<th>AETI'S</th>
<th>No. of groups (N=23)</th>
<th>Reasons</th>
</tr>
</thead>
</table>
| Government                  | 15                   | • Free training  
• Train farmers in their own language  
• Provide training on all production issues  
• Respond immediately when the need arises |
| Government and Parastatals | 2                    | Free inputs from parastatals and supervision from Government officials |
| Parastatals                 | 1                    | Provide free inputs for demonstration to farmers                        |
| Private companies           | 1                    | Since they produce a particular product they have more knowledge about it |
| Institutions, e.g. Colleges | 1                    | Provide recognized qualification after training                          |
| Government and private     | 1                    | Specialized knowledge from private company trainers and more information from Government trainers |
| Government, parastatals and private companies | 1 | Specialized knowledge from private company trainers, more information from Government trainers and free inputs from parastatals |
| Any                         | 1                    | Lack of knowledge on how they differ                                      |
The majority of subsistence farmer groups prefer to be trained by Government institutions, since they are capable of responding rapidly to their training needs. Training of trainers is necessary for them to provide need-responsive training to farmers, hence Department of Agriculture needs to fund and effectively manage a training budget.

3.2.1.6 Preferred training methods

Farmers prefer presentation and demonstration (action based training) as training method. Training in agriculture should include formal presentations, informal discussions, demonstrations and provide opportunities to try out new skills and knowledge in the field. Training should be in the mother tongue of farmers, since majority of farms are illiterate or semi-illiterate. It is essential that when written information is provided that it also be in the language that they can understand.

3.2.2 Commercial farmers

3.2.2.1 Activities

The activities of the commercial farmer would include:

- Raising of money
- Assembling of factors of production
- Making decisions on what crops to produce
- Making decisions on how factors of production will be combined
- Product marketing

He/she is to assume full control and risks involved in their particular enterprise.

3.2.2.2 Skills required to undertake activities

A farmer needs skills and knowledge that will enable him to fulfil his role as the farmer, technician and manager. Mechanization of agriculture and skills required for “agri-business” place a higher premium on training (Mamiminza 2000: 18). There are three broad categories of skills required in the farming business, namely crop production, livestock production and other skills. Other skills include marketing, farming systems, farm management, farm mechanization, post harvest technology and soil and water management practices. Lately labour management and implementation of labour laws have become important issues for which special skills (e.g. negotiation) and knowledge (on legislation) are required.
3.2.2.3 Existing knowledge and skills required

The following percentages of respondents (commercial farmers) indicated that they have acquired knowledge and skills in the indicated fields (Total respondents = 75).

<table>
<thead>
<tr>
<th>Field</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal production</td>
<td>27</td>
</tr>
<tr>
<td>Labour management</td>
<td>41</td>
</tr>
<tr>
<td>Occupational safety</td>
<td>29</td>
</tr>
<tr>
<td>Technical matters</td>
<td>15</td>
</tr>
<tr>
<td>Agro-chemical uses</td>
<td>14</td>
</tr>
<tr>
<td>Plant production</td>
<td>28</td>
</tr>
<tr>
<td>Irrigation</td>
<td>24</td>
</tr>
<tr>
<td>Admin management</td>
<td>26</td>
</tr>
<tr>
<td>Fertilization</td>
<td>52</td>
</tr>
<tr>
<td>Poultry production</td>
<td>2</td>
</tr>
<tr>
<td>Marketing</td>
<td>38</td>
</tr>
<tr>
<td>Financial</td>
<td>19</td>
</tr>
</tbody>
</table>

It must be noted that one respondent might have been skilled/trained in more than one field.

3.2.2.4 Knowledge and skills required

The following number and percentages of respondents indicated that they required training/skills development in the indicated fields.

<table>
<thead>
<tr>
<th>Field</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal production</td>
<td>18</td>
</tr>
<tr>
<td>Financial</td>
<td>33</td>
</tr>
<tr>
<td>Labour management</td>
<td>44</td>
</tr>
<tr>
<td>Agro-chemical use</td>
<td>17</td>
</tr>
<tr>
<td>Plant production</td>
<td>21</td>
</tr>
<tr>
<td>Technical matters</td>
<td>23</td>
</tr>
<tr>
<td>Marketing</td>
<td>12</td>
</tr>
<tr>
<td>Poultry</td>
<td>7</td>
</tr>
<tr>
<td>Safety</td>
<td>26</td>
</tr>
<tr>
<td>Fertilizers</td>
<td>13</td>
</tr>
</tbody>
</table>

Training provides a set of concepts and tools that enable participants’ to approach (Norman 1998: 132). Training should be a continuous effort to enhance farmer’s capacities for him to solve different farming problems and increase their production.
3.2.2.5 Preferred training providers and methods

Preferred training providers by commercial farmers, is 71% private companies, 23% Government and 6% parastatals.

3.3 Knowledge and skills of service providers

Directorate: Regional Farmer Support Services in the Department of Agriculture, Conservation and Environment consists of three divisions, namely extension, home economics and non-formal training. The mission for home economics is to improve household food security. Extension is to render farmer support service while non-training officers are as indicated in the table.

3.3.1 Activities of extension and training officers (non-formal training)

<table>
<thead>
<tr>
<th>Extension Officer</th>
<th>Training Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carry out physical planning of farms</td>
<td>Determine agricultural training needs</td>
</tr>
<tr>
<td>Promote positive media involvement</td>
<td>Compile training audio-visuals</td>
</tr>
<tr>
<td>Address and solve agricultural problems</td>
<td>Develop and update training materials</td>
</tr>
<tr>
<td>Survey, design and plan development activities</td>
<td>Schedule agricultural training and compile a training programme</td>
</tr>
<tr>
<td>Promote wide community involvement in development projects</td>
<td>Present training on agricultural technical matters</td>
</tr>
<tr>
<td>Promote sound organizational structuring with the farming community</td>
<td>Arrange for presentation of training courses by other institutions</td>
</tr>
<tr>
<td>Conduct trials and demonstration</td>
<td>Participate in technology transfer and pro-active development initiatives</td>
</tr>
<tr>
<td>Provide advice on technical matters</td>
<td>Provide advice on technical matters</td>
</tr>
<tr>
<td>Compile reports and documents as required by legislation and official policy</td>
<td>Compile reports and documents as required by legislation and official policy</td>
</tr>
<tr>
<td>Promote sustainable land use</td>
<td></td>
</tr>
</tbody>
</table>

Activities for extension and training officers include attending personnel meetings, administration, reading and self-development. There are ongoing debates on the scope of extension, as to whether the activities of extension officers are based on rural development or on agricultural development. It is recommended that in order to improve the efficiency
of extension services, the extension officer needs to focus mainly on activities related to agricultural development.

### 3.3.2 Skills required to undertake activities of extension officers and training officers

Agricultural production is severely hampered by farmers’ lack of knowledge and skills. The advice and information generated and provided through an efficient extension service could make a contribution to the empowerment of farmers hence the training offered by AETI’s to extension officers is essential (Kirsten DBSA, 1997: 70).

<table>
<thead>
<tr>
<th>Extension officer</th>
<th>Training officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer skills</td>
<td>Computer skills</td>
</tr>
<tr>
<td>Facilitation skills</td>
<td>Facilitation skills</td>
</tr>
<tr>
<td>Communication skills</td>
<td>Communication skills</td>
</tr>
<tr>
<td>Budget management skills</td>
<td>Presentation skills</td>
</tr>
<tr>
<td>Policy and development process</td>
<td>Skills in adult learning</td>
</tr>
<tr>
<td>Project management skills</td>
<td>Training programme on management skills</td>
</tr>
<tr>
<td>Extension approaches and methodology</td>
<td>Extension approaches and methodology</td>
</tr>
<tr>
<td>Skills and knowledge in technical matters</td>
<td>Skills and knowledge in technical matters</td>
</tr>
<tr>
<td>Presentation skills</td>
<td></td>
</tr>
</tbody>
</table>

“While working conditions of extension personnel have deteriorated, expectations with regard to their role are increasing. They are no longer to be simply transmitters of technical knowledge. They are to practice participatory methods, recognize and respect gender issues, identify indigenous needs and problem solution and serve as a link to the world outside the village, to name but a few of the present topics. The emerging role is closer to that of a socio-economic community worker than technical experts, but their training is insufficient for either” (Blackburn and Flaherty, 1994). That means AETI’s need to be capable of responding flexibility to clients’ needs to changing circumstances. The extensionist is indeed a change agent.
3.3.3 Existing knowledge and skills by extension and training officers

Training for extension agents at AETI’s was on two categories, namely basic and technical training. Basic training is training in extension approaches and in determining farmers needs and communication skills, while technical training is training on production issues. Formal training alone is not adequate but should be backed up by up-to-date in-service training.

41% of the respondents attended training on production issues, 16% on presentation issues, 12% on business issues, 9% on computer issues, 3% on home economics issues and 19% attended no training in the past two years. The majority of respondents needs focus mainly on production issues. There is a need to balance technical, economic and financial knowledge and skills of extension and training officers for them to contribute positively to economic constraints experienced by subsistence farmers. Extension officers are to advise subsistence farmers on how to market their products and to identify new products for which there is a market. It is therefore important for them to attend training courses in marketing.

3.3.3 Training needs of Trainers

The training needs of trainers as identified by the respondents are as indicated in the diagram below.

Total number of respondents are 11. Majority of respondents training needs focus on animal production and computer courses. Training on crop production issues include organic farming and hydroponics. It is
essential for extension officers to upgrade their technical knowledge about enterprises practiced by the farmers. Lack of training on technical matters by extension officers affect the quality of advice or training they offer to farmers. Trainers need to be trained on training skills such as presentation skills, which will make them effective in diffusion and adoption of technology. Training in andragogy, i.e. theory in adult learning should be a compulsory training for extension and training officers, since adults are their main clients.

3.3.4 Training needs of extension officers

![Training Needs of Extension Officers](chart)

Training needs of extension officers are 24% on production issues, 21% on business issues, 13% on computer issues, 8% on human resource management, 8% on sewing issues, 5% on agricultural engineering, 5% on cookery, 5% on project issues, 5% on hydroponics, 3% on soil issues and 3% on other issues. Total number of respondents is 46. Training needs for extension agents includes technical matters, computer, entrepreneurial and human resource management skills. It is essential that extension officers be trained on these issues, as they are to play a pivotal role in identifying farmer’s problems, their farming constraints in production and business issues. Formal AETI's need to include computer and resource management as compulsory courses for agriculturalists. Employers have the primary responsibility for re-training their agriculturalists to improve their productivity. Social and economic trends necessitate more highly trained, specialized and technically competent agriculturalists.
3.3.4 Preferred training provider by extension and training officers

The following table indicates the preferred training institutes as indicated by 57 respondents. The reasons for the preference are indicated.

<table>
<thead>
<tr>
<th>AETI's</th>
<th>%</th>
<th>No.</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>42</td>
<td>24</td>
<td>It is cost effective and they have a broad knowledge on production principles, i.e. their focus is not on promoting certain products.</td>
</tr>
<tr>
<td>University</td>
<td>25</td>
<td>14</td>
<td>Provide recognized qualification at the end of training, they have up to date information because they are also involved in research. They offer training on new technology and they have qualified trainers with experience in their field of specialization.</td>
</tr>
<tr>
<td>Different AETI's</td>
<td>17</td>
<td>10</td>
<td>They differ according to their field of specialization, and therefore can meet the demand of the trainees.</td>
</tr>
<tr>
<td>Technical Colleges</td>
<td>8</td>
<td>4</td>
<td>They offer necessary practical training in sewing and cookery.</td>
</tr>
<tr>
<td>Private companies</td>
<td>8</td>
<td>5</td>
<td>They develop new technology and have better knowledge about such technology.</td>
</tr>
</tbody>
</table>

Universities and Government Institutions are the preferred AETI's. Government training institutions provide knowledge-based technology such as the technical knowledge management skills. Private companies develop and distribute product technology. They provide training where knowledge is embodied into a technological product such as equipment, agro-chemical, improved plant varieties and others. AETI’s need to work together to meet the training demands according to their expertise.

3.3.5 Preferred training methods by extension and training officers

Preferred training methods by agriculturalists, are presentation and demonstration. For training to be effective the chosen training
methods should clearly illustrate desired skills, provide an opportunity to practice, be adaptable to specific problems and be structured from simple to complex tasks.

3.4 Knowledge and skills of educators

Success in any profession requires that the practitioner be equipped with the necessary professional knowledge by means of training. The professional requirements of agricultural teachers are as follows: Firstly, they have an educational task and must therefore be conversant with the science of education. This means they must be sufficiently familiar with all the part-disciplines of pedagogy. In this way they come to understand children and learn how to accompany them educationally towards adulthood. Secondly, they practice this pedagogical involvement with the child within the framework of a particular subject area. This means that they must also be sufficiently qualified to handle the subject-related aspects of the teaching situation with ease and authority. A thorough knowledge of fundamental agricultural theory is a part, but only a part of what is expected of the agricultural teacher.

Equally important is ready knowledge of the practical application of theoretical principles. This knowledge is essential for the teachers’ authoritative personal demonstration of production and experimental skills in farming at the school. To succeed in this, the teacher should be acquitted with farming, for they will inevitably become involved in it in the curse of undertaking partial or total managerial responsibility of school farm. Pupils will judge the credibility of their teachers’ theoretical postulates by success of their contribution to farm management.

3.4.1 Activities of agricultural educators

- Teach agricultural science
- Teach career guidance
- Offer practicals in agriculture
- Participate in extra-mural activities
- Act as outcome based education co-ordinator
- General administration, including marking registers, marking tests and keeping records.

Agriculture is a practical subject therefore activities of agricultural teachers should include conducting of practicals and demonstrations. Other activities are the arranging of field trips, visits to local farms and research stations. Agricultural teachers are experiencing problems in teaching agriculture and this affects the performance of learners. The major problem is lack of resources, equipment and tools for doing practicals. Other problems are students’ lack of motivation and dedication to their schoolwork, language problems and over-crowded classes. Provision of resources, treating all languages as official
languages, reducing the number of students per class and the hiring of teachers will help in solving these problems. Presentation of agricultural career guidance to learners and provision of bursaries to students pursuing agriculture as a career at tertiary level, will motivate students to take agriculture.

3.4.2 Skills by agricultural educators to undertake activities

Agricultural teachers attended pre-service training offered by formal institutions following definite curriculum and syllabuses of certain duration to obtain a formal diploma or degree. The following are the skills required by agricultural teachers:

- Education
- Computer skills
- Bookkeeping skills
- Communication skills

Skills required by agricultural teachers include pedagogical skills and technical subject matter, such as crops, animal husbandry and other aspects. Both teaching and agriculture are dynamic sciences. Knowledge of both fields is increasing at a bewildering rate therefore an agricultural teacher must keep abreast of events. The introduction of refresher courses (winter and/or summer schools) could be considered.

3.4.3 Existing knowledge and skills or training attended by agricultural educators

16% attended training on agricultural issues, 5% on syllabus and setting of question paper courses, 5% on timber and HIV and Aids. 74% of the respondents have not attended any training event in the past two years. Training of educators in agricultural technical matters is not sufficient. It is essential for educators to attend refresher courses on technical matters to enable them to add the knowledge and skills they have already in agriculture. Such training will promote professional growth and strengthen the competencies of agricultural teachers.
3.4.4 Training needs of agricultural educators

The following diagram indicates the training needs of agricultural educators:

![Pie chart showing training needs of agricultural educators](image)

The total number of respondents is 64 educators. 86% of respondents require training on agricultural related issues, 11% on environmental issues, 2% on food issues and 1% on computer issues. Training needs on agricultural issues include organic training. Training needs as indicated by educators mainly included technical matters since they lacked training in this field. Narrow training of agricultural teachers, that excluded the practical skills necessary for development, is the key factor in hindering the effectiveness of educators. Training for educators in technical matters should include practical work, visits to local stations and farms, as well as the attendance of agricultural shows. Refresher training should be given to update and maintain the specialized subject matter knowledge of the educator.
3.4.5 Preferred training provider

<table>
<thead>
<tr>
<th>AETI’s</th>
<th>% of Individual (N=64)</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Departments</td>
<td>67</td>
<td>They cover all the training costs, trainer knowledge of local problems and have technical knowledge. Provide certificate recognized by the Department of Education.</td>
</tr>
<tr>
<td>Private companies</td>
<td>21</td>
<td>Have necessary equipment, trainers are exposed to advanced technology and they offer intensive farming training.</td>
</tr>
<tr>
<td>Parastatals</td>
<td>6</td>
<td>Well organized, well equipped and have more knowledge as a result of the research they conduct.</td>
</tr>
<tr>
<td>Technikons</td>
<td>3</td>
<td>More practical.</td>
</tr>
<tr>
<td>Agricultural Colleges</td>
<td>3</td>
<td>Well equipped.</td>
</tr>
</tbody>
</table>

Agricultural educators prefer mainly action based training methods. AETI’s must meet the demands of the clients and changes, by focussing on outcome based education. Learning programmes offered by AETI’s need to combine theory and practice. Results of such curriculum/learning programme is that trainees will acquire agricultural knowledge and skills that would enable them to start farming businesses instead of being unemployed.

3.5 Knowledge and skills needs of managers

3.5.1 Activities

Managers are concerned with the optimum attainment of organizational goals and objectives with and through other people. Activities of managers centre on the following:

- Planning – outlining philosophy, policy, objectives and resultant tasks to be accomplished and the techniques of accomplishment
- Organizing – establishment structures and systems through which activities are arranged, defined and co-ordinated in terms of some specific objectives
- Staffing – fulfilling the personnel function, which includes selecting staff, training staff and maintaining favourable work conditions
Directing – making decisions, embodying decisions in instructions and serving as the leader of the enterprise.

Co-ordinating – inter-relating the various parts of the work

Reporting – keeping those to whom you are responsible, both staff and the public, informed

Budgeting – making financial plans, maintaining accounts and management control of revenue and keeping costs in line with objectives.

Generally managers are engaged in four types of activities, namely building and maintaining relationship, getting and giving information, influencing people and decision-making. The other activity of managers is serving on management committees of other AETI’s.

3.5.2 Skills required to undertake activities

Management is the process by which people, technology, job tasks and other resources are combined and co-ordinated so as to effectively achieve organizational objectives (Waldron and others). In order to carry out these responsibilities managers need the following skills:

- Negotiation skills
- Inter-personal skills
- Problem-solving skills
- Resource management skills
- Human resource management skills
- Information system management skills

A management position requires certain levels of skill proficiency. It is therefore essential for manager to be trained.

3.5.3 Existing knowledge and skills (training attended)

3.5.3.1 Training attended by school principals

The total number of respondents is 38 principals. 40% respondents attended training on administration and management issues, 10% on agricultural related issues and 3% of health related issues, e.g. HIV-Aids. 47% of respondents have not attended any training in the past two years.

3.5.3.2 Training of Managers of other AETI’s

36% of respondents attended training on management, 18% of agriculture related issues, 18% on administration issues, 18% on development issues and 10% on food-related issues. 46% of the respondents never attended any training in the past two years.
Majority of respondents attended training on management rather than any other training because of their responsibilities. Training on agricultural related issues is mainly for frontline workers as they are the ones working directly with farming communities. Only 3% of managers attended training on HIV-Aids issues. It is essential that managers attend training on HIV-Aids issues since the rate of people living with HIV is increasing and it also involves people in AETI’s. Training on HIV issues will enable managers to treat people living with HIV in a right way and to support them.

3.5.4 Skills gap and training needs

Managers control the activities of lower-level employees and through those employees, in their charge, they are responsible to carry out the policy and goals of management. Managers are a link between lower level and higher level employees therefore it is essential that they be trained in order to execute their work effectively. Managing people effectively is a skill that requires constant planning and development. Training on management skills will enable the manager to devise strategies, make informed decisions and implement action.

3.5.4.1 Training needs of the school principals

67% of respondents stated that they need training on administration and management issues, 15% on school related issues, 10% on agricultural related issues and 8% computer issues.

3.5.4.2 Training needs of managers of other AETI’s

67% of respondents need training on management, 21% on agriculture issues and 12% on computer issues.
Out of a total number of managers, including principals, 94% said that they needed training while 6% of the respondents did not think that they needed training. One respondent said “I am too close to retirement therefore I would prefer the opportunity to be offered to younger colleagues”. Managers needed training on human related issues rather than on technical ones. Training on human related issues is essential to develop proficiency and thereby increase the manager’s capabilities in dealing with other people. They also needed to be trained on how to motivate others and build an efficient working team. Managers are in different levels of management and therefore their training needs differ according to their responsibilities hence there are managers who still need to be trained on agricultural issues.

### 3.5.4 Preferred training provider

<table>
<thead>
<tr>
<th>AETI's</th>
<th>% of Individual (N=48)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private company</td>
<td>32</td>
</tr>
<tr>
<td>Technikons</td>
<td>17</td>
</tr>
<tr>
<td>Government</td>
<td>17</td>
</tr>
<tr>
<td>University</td>
<td>17</td>
</tr>
<tr>
<td>Government and private company</td>
<td>17</td>
</tr>
</tbody>
</table>

Managers preferred mainly private companies to train them because they are efficient, up to date with reality and have knowledgeable and professional trainers.

### 3.6 Conclusion/Summary

Farm workers are part of the production team and the majority of them receive no training. It is imperative for farm workers and beneficiaries
of the Land Reform Programme to have access to AET because training is the pre-requisite for successful farming. Extension programmes and training programmes can be used to address the training needs of farmers. Training needs for beneficiaries of the Land Reform Programme should include the entire spectrum of agricultural knowledge. Agricultural education and training institutions need to cope with change such as agricultural technology, needs of the farmers, market economy, imports and exports. Training provides skills required. Trainees become more productive and their value in the labour market increases. The benefits of training to the trainee are creation of opportunities for promotion, increased earning capacity and job security.

AETI’s advisory committees should compose of farmers to provide management with direction and feedback on farmer’s problems and priorities, so that these can be included in the training curriculum/learning programme of agriculturists. AETI’s need to offer short courses on the latest technology for employed agriculturists to update them. They need to liaise with the users of AET products in order to know the required skills and knowledge for different posts so that they can adapt their curriculum/learning programme. This will help link training to certain career paths and will ensure marketability of these graduates. This will result in AETI’s providing essential skilled manpower to the formal and informal sector of the economy.
4.1 Introduction

This chapter provides information about methods or ways of training farmers from secondary education to tertiary education. It looks again at the training methods used by the organizations providing non-formal and informal training. Above all it presents the enrolment, capacity and tuition fees charged by various providers of agricultural knowledge and skills in Mpumalanga Province.

4.2 Formal education and training provision (Higher, Further and Basic education)

4.2.1 Courses/Training offered

The formal education and training in agriculture commences at secondary schools, whereby agricultural science is being offered as a school subject under natural sciences according to Curriculum 2005. Lowveld College of Agriculture as a tertiary institution offers a 2 year Higher certificate in Plant Production, a diploma in Plant production obtainable after 3 years of study or a diploma in Agricultural Extension obtainable after 3 years.

4.2.2 Target groups

The secondary schools are basically targeting the school-going learners from primary schools. The college is targeting those people who have passed grade 12 irrespective of race, gender, culture and/or nationality.

4.2.3 Enrolment

The enrolment at secondary schools varies from 15-160 agricultural science learners.

The enrolment at the college has precisely 180 farmers in learning. However, the college can accommodate more than that number.

4.2.4 Methods of provisioning/training

Most of the secondary schools are solely using theoretical principles and as such theory is the main method. However, farmers in learning are sometimes given a chance to do short research work during their third year. The main methods utilized at the college are theory and practice.
4.2.5 Management

The management at schools usually comprises of principals and his/her deputy principals. The college management comprises of the principal (Rector), 2 deputy principals (1 for academic and 1 for student affairs – not available at time of this study), 1 administrator and 2 farm managers.

4.2.6 Tuition fees

<table>
<thead>
<tr>
<th>Organization/Institution</th>
<th>Tuition Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Secondary Schools</td>
<td>From ± R50-00 to ± R4 000-00</td>
</tr>
<tr>
<td>Private Secondary Schools</td>
<td>From ± R4 000-00 to ± R18 000-00</td>
</tr>
<tr>
<td>Tertiary Institutions</td>
<td>From ± R16 500-00 to ± R18 500-00</td>
</tr>
<tr>
<td>Other Organizations</td>
<td>From ± R1 300</td>
</tr>
</tbody>
</table>

(Private sector)

4.2.7 Capacity and resources

The capacity resources at secondary schools, more especially government schools, are desperately inadequate. However, this is quite different with private schools, which are in most cases getting donations from private companies. However, the Government schools may still apply for the donations from the private companies. The resource capacity is on average inadequate.

The College has only four lecture halls which can accommodate a minimum of approximately fifty learning farmers and a maximum of sixty learning farmers. Learners do not have any free lecture halls for private studying during the lectures. The library is small and poorly equipped. The computer room is small with very few computers,
### 4.3 Non-formal education and training provision

<table>
<thead>
<tr>
<th>Service Provider</th>
<th>Category</th>
<th>Course/s provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural College</td>
<td>Formal</td>
<td>Plant Production Higher Certificate, Plant Production Diploma</td>
</tr>
<tr>
<td></td>
<td>Non-formal</td>
<td></td>
</tr>
<tr>
<td>Agricultural Secondary Schools</td>
<td>Formal</td>
<td>Applied Agric, Agric Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Secondary Schools</td>
<td>Formal</td>
<td>Agricultural Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mthimba College (Community)</td>
<td>Non-formal</td>
<td>Plant Production, Animal Production, Business Management, Wool Production, Dairy, Poultry, Timber, ABET and Marketing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buhle College (Community)</td>
<td>Non-formal</td>
<td>Plant Production, Animal Production, Business Management, Wool Production, Dairy, Poultry, Soil Science and Marketing</td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural Research Council</td>
<td>Non-formal</td>
<td>Soil Preparation, Citrus and Fertilizers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citrus Research International</td>
<td>Non-formal</td>
<td>Citrus, Management, Marketing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervet Mpumalanga</td>
<td>Non-formal</td>
<td>Animal Health, Insecticides and Herbicides</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mzinti Training Centre</td>
<td>Non-formal</td>
<td>Plant Production, Animal Production, Business Management, Wool Production, Dairy, Poultry, Soil Science, Marketing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funda Mlimi Training Centre</td>
<td>Non-formal</td>
<td>Plant Production, Animal Production, Business Management, Wool Production, Dairy, Poultry, Soil Science and Marketing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGOs: TRAC-MP</td>
<td>Non-formal</td>
<td>Soil Preparation, Farm Management, Administration, Financial Management, Pests and Diseases Control, Poultry, Animal Husbandry, Plant Production</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marc-Dev Consultants</td>
<td>Non-formal</td>
<td>Farm Management, Administration, Financial Management and leadership</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVG Consultants</td>
<td>Non-formal</td>
<td>Farm Management, Administration, Financial Management and leadership</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correctional Services</td>
<td>Non-formal</td>
<td>Animal Production, Plant Production, Piggery, Poultry, Pottery</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3.2 Target groups

The Community Colleges, Training Centres, NGOs and Research Institutions are basically targeting farming communities. Correctional Services is basically concentrating on inmates whereby the primary aim is to develop them in such a way that they will be able to gain the agricultural knowledge and skills which will then enable them to make a better living when they come out of prisons.

4.3.3 Enrolment

The enrolment differs from one institution to another. These institutions do not usually determine the role of their participants. They depend on the number of people who are keenly interested in courses they are offering. However, it must be noted that other institutions like Correctional Services may not be in a position to invite or advertise the courses that they are offering hence they are fundamentally assisting the inmates to assist themselves.

4.3.4 Methods of provisioning/training

The training methods in most of the institutions, if not all the institutions, are basically theory and practice.

4.3.5 Management

Some of the institutions or organizations providing agricultural education and training have loos-management structures while some have fast-management structures. Some of the institutions are operating under the Government policies while some under private policies.

4.3.6 Tuition Fees

Not all the institutions are charging tuition fees for their training. The NGOs, Training Centres and Correctional Services do not charge tuition fees when training the farmers or inmates (Correctional Services). Research Institutions are charging the fees depending on the type of service that has been rendered. The Community Colleges charge a tuition fee from ± R1 300-00.

4.3.7 Capacity and resources

Most of the institutions have got good resources for training the farmers. They then opt for theoretical training.
4.4 Informal training and indigenous knowledge

The informal training and indigenous training usually takes place between the farmers in a very informal situation. This can take place on farmers’ day, where farmers share agricultural knowledge and skills.

4.5 Conclusion/Summary

It is important to mention that tertiary institutions such as Lowveld College of Agriculture should co-operate with and support the agricultural education at secondary schools. This will help to bridge the agricultural educational gap in between these education organizations. This could be done through collaboration with agricultural educators. This may even be extended to other providers such as Research Institutions.

There is a large gap if not misunderstanding between the Government extension officials and private sector extension officials. This is creating a very serious confusion within the farming community, especially the developing farmers. This has been observed in the sugarcane industry. The poor co-operation and/or collaboration should be eradicated sooner.

In most cases the training methods are predominantly theoretical. It is very rare to find a small agricultural garden at schools, and yet no educational excursions are undertaken by the learners at such schools.

It has been noted that some of the agricultural knowledge and skills providers are fundamentally profit orientated. Their fees are extremely high. As it has been mentioned above, there are Government schools which are charging approximately R4 000-00 per annum per learner. This could be observed at schools which are found in towns or cities, especially the former White schools.

It has been realized that most of the schools are poorly equipped and over-crowded. The educators’ qualifications are however dismally very poor.
5.1 Introduction

This chapter determines the gaps in AET by analyzing training provided by AETI's and what is required. Assessment of training required is based on training needs and on training capabilities of AETI's. It also considers the market needs, rapid technological development and global issues such as sustainable development.

Training is the circular process that begins with need identification and after a number of steps, ends with evaluation of the training activities. A gap or deficiency in any step of the training process affects the whole system. Gaps in training provision can be traced from any of the four phases of the training process, namely planning, implementation, monitoring and evaluation. Training gaps listed below were identified from the steps in the planning phase of training, which is the foundation of the whole training effort and implementation phase.

5.2 Clients

Training does not accommodate subsistence farmers in formal AETI's. Admission requirements for formal AETI's, need to cater for such clients. Information about the needs, skills and capacities of the client should be gathered. This is essential because the rate at which learning will take place is governed by trainees' personal factors, such as age, literacy rate and others. Training programmes should suit trainees' work and cropping calendar, therefore work schedules, daily and seasonal routine of trainees should be considered when compiling training programmes. AETI's are not well marketed to the potential trainees. AETI's need to develop training brochures that contain course descriptions, prepare an annual calendar of training opportunities and market themselves to the community, including schools and farmers. Marketing of formal AETI's and agricultural careers to learners will encourage them to pursue careers in agriculture.

5.3 Training courses/programmes

Gaps in training provision include training programmes that do not meet the training demands of clients by AETI's, are as follows:

5.3.1 No training in hydroponics

There is an increasing need for the use of hydroponics as more people become aware of its uses, potential and advantages of conservation of natural resources.
Unfortunately, there no AETI in Mpumalanga offering this training. Farmers need training in hydroponics to gain knowledge on improved techniques that may be used to produce high quality crops in a sustainable manner in order to meet increasing food demand caused by a growing population. Hydroponics training course should be introduced in AETI’s for training to be relevant to market needs. It is therefore essential for AETI’s to be equipped to offer practical training for this course. Infra-structure determines the number of clients who can be accommodated and the standard or level of training offered by AETI’s. Training programmes should bring together AETI’s to work together to meet the training demands according to their field of specialization and to address multiple realities. It is expensive to provide practical training in agriculture therefore AETI’s need to compliment each other instead of offering the same training courses and waste available resources. Certain AETI’s will be used to conduct practical demonstrations on certain aspects of agriculture. Human resource capacity can be used effectively by AETI’s by using trainers from different AETI’s as “guest trainer”.

5.3.2 No training in bee-keeping

No Agricultural Education and Training Institution in Mpumalanga is offering bee-keeping courses. Bee-keeping seems to have gained status with its introduction. Bee-keeping will play a role in agricultural production because the honey-bee is the most numerous of all insect pollinators. It can be induced to work on a variety of agricultural crops. The most important asset is the fact that man has a degree of control over honey-bees which enables him/her to produce honey in the quantities he/she desires and at the time and place he/she desires. This knowledge of how to manipulate honey-bees is thus vital to the success of intensive agricultural practices, hence it is essential that training on bee-keeping be provided by AETI’s.

5.3.3 Lack of appropriate technology

A percentage of resource poor farmers influence the type of technology to be included in the training courses. Lack of appropriate technology for resource poor farmers results in failure to perform or apply knowledge and skills gained during training and this is not cost effective. Development and training on appropriate technology is the key to agricultural development for subsistence farmers.

Research and training linkages is indispensable for development and diffusion of appropriate technology, which are economically, environmentally and socially acceptable. Research has the responsibility of generating technology that is relevant to all categories of producers including small-scale farmers and agro-ecological zones. Development and introduction of appropriate technology from other developing countries for resource poor farmers is essential. Linkage between researcher, trainer and farmer must be improved for
development of appropriate technology. The Department of Agriculture needs to channel a significant proportion of funding to the development of appropriate technology for resource poor farmers.

5.3.4 Indigenous knowledge and cultural practices in training programmes

Training must focus on promotion of application of indigenous knowledge, innovation and practices. “Researchers need to be more sensitive to the local knowledge of farmers, to check whether this knowledge has applicability and value in the wider system and to incorporate this knowledge into the design of research programmes. At the same time researchers should acknowledge the source of knowledge used and give due credit to those who have developed the information base” (White paper on Agriculture, 1995).

5.4 Training methods

5.4.1 Theory based training

Training methods that do not combine theory and practice. “A training programme has a better change of success when its training methods are a strategy or tactic that a trainer uses to deliver the content so that the trainees achieve the objective” (Wentling, 1992). To achieve the training objective, a trainer should select the most appropriate training method for the content. Four major factors are considered when selecting a training method, namely the learning objective, the content, the trainees and the practical requirements (Wentling, 1992). Different training methods can be used to achieve the objectives of a particular training. There are different training methods for presenting training and that includes the following:

- Role-playing – the trainer acts out a situation in an instructional setting
- Presentation – the trainer orally presents new information to the trainees
- Demonstration – the trainer shows the correct steps for completing the task
- Group discussion – the trainer leads the group of trainees in discussing a topic
- Assigned reading – the trainer gives the trainees reading assignments that provide new information
- Exercise – the trainer assigns problems to be solved either on paper or in real situations related to the topic of the training activity.
- Case study – the trainer gives trainees information about a situation and directs them to come to a decision or solve a problem concerning the situation
Field visits and study tours – trainees are given the opportunity to observe and interact with the problem being solved or skills being learned.

The majority of subsistence farmers are illiterate therefore training should be in the mother tongue of farmers instead of English.

5.5 Cost

Cost for tuition should be affordable to provide opportunity to clients especially unemployed people. As training improves productivity, it should be regarded as an investment rather than cost, hence it must be financed. It is essential that training in agriculture be subsidized by Government to broaden access to relevant people. Venues for training should be convenient for the trainees.

5.6 Admission requirements

Admission requirements for AETI’s should be based on personality traits such as attitude and motivation to learn rather than achievement at schools although this is difficult to measure. This provides opportunity to all interested people.

5.7 Resource and capacity of provider

5.7.1 Training budget is limited.

Budget and time available plays a role when choosing training methods and visual aids to be used during training. Budget limitation will determine the training methods to be used, while training methods to be used must be tailored to fit the allocated time since effective use of many training methods required a definite amount of time. Funds should be sufficient for training materials, facilities, equipment, transport, food and lodging. There is a need for expansion and upgrading of training facilities. AETI's lack facilities for disabled people. There is a high accident rate in South Africa and that will result in large numbers of people being disabled. It is essential that the needs of these people be catered for in AETI's.

Level of training and level of experience are other factors that make a trainer competent in his work. In-service training on technical matters will increase knowledge and mastery of techniques therefore this will result in improved performance by trainers. Trainers lack facilitation skills to be effective as a trainer. Beside technical knowledge, group dynamics, sensitivity to all form of discrimination in order to encourage mutual respect and understanding, are the pre-requisites for the trainer. The trainer's ability to communicate well and to establish a good learning environment is important in training, yielding desired results. Trainers need specific training techniques and syllabus should include the following themes:
Ice breaking techniques  
Teaching skills  
Problem solving approaches  
Use of teaching aids  
Planning and presentation of the course

Majority of trainers are agriculturally qualified but lack practical experience.

5.8 Training system

5.8.1 No recognized qualifications after training

AETI’s provide certificate of attendance after training. “Another important aspect that will impact on the relevance of training to the needs of the economy is the recognition of training qualifications on a national basis and the accreditation of training courses and institutions. Unless the training done and qualifications acquired, meet the criteria of the end-users of such training countrywide, no meaningful social and individual returns on investment in training can be expected and a large degree of waste, frustration and underemployment may result” (Coetzee 1992: 308, Dev Southern Africa). Provision of recognized certificates after training will increase job opportunities for the trainees. Accreditation of AETI’s improve the quality of training as it indicates that the institution has the necessary expertise to conduct specific training.

5.8.2 There is poor co-ordination between different AETI’s

Better co-ordination between AETI’s is essential. Communication and co-ordination should be developed between Government institutions and other AETI’s to avoid duplication of effort and conflicting messages to the farmers. Joint committees for AETI’s, need to be established, to manage training. The committee will identify problems of AET, consult experts, make necessary recommendations and will also plan for future skill needs. The committee will form a link between AETI’s and the farming community. Co-ordination will facilitate joint use of infra-structures by different AETI’s for training purposes. Co-ordination of training activities can be done by a knowledgeable person who will also act and speak on behalf of the AETI’s.

5.8.3 No provision of after-care programmes after training

AETI’s need to develop a well-documented after-care programme for farmers. It must be clearly specified whose responsibility it is to implement after-care programmes between the trainer and extension agent. After-care programmes should be included in the training budget. No evaluation of training is conducted. AETI’s are only interested in the number of people trained in order to write an annual report. There should be a shift in emphasis from training for quantity to
training for quality. Evaluation is essential since it assesses the results of the past action in order to incorporate the lessons in the future planning. It determines how objectives have been met, assess the impact and sustainability of what has been achieved. The four criteria namely reaction, learning, behaviour and results should be used to evaluate training. This will provide justification and motivation for the budget to the policy-makers and other public organizations.

5.9 Training relevance

5.9.1 Training goals are not consistent with those of the trainees

Training programmes provide the means for achieving specific objectives. Farmers have better knowledge of their area, problems, present situations and desired situations therefore they should be involved in all the training phases. Goals should be measured by attainment of a given level of proficiency, i.e. emphasis should be given to acquiring specific observable skills for the task.

5.9.2 Poor training needs identification

“Extension personnel have sometimes been guilty of specifying what a farmer is supposed to learn without having conferred with the farmer, particularly in the case of women farmers. Not surprisingly, the result is usually one of the poor participation by the farmer in the proposed learning experience, if not outright rejection of it” (Compton in Swanson, 1984). Training is based on training needs identification. The word “need” means something is lacking. Identification of training needs means that performance is not up to the level required. By describing a need as a training need, we mean the gap or need can be put right by systematic training. Existence of training needs states that a change is necessary and the change agent is the training event. Participatory rural appraisal tools can be used in training needs identification, especially for subsistence farmers.

Curriculum that does not address the identified training needs and trainees are the result of stakeholders not being involved during curriculum development. Training should be need based and only when training needs have been comprehensively relevant to the needs and background of the trainees. Feed-back on farmer’s needs and production problems should be part of the training course. Effective curriculum requires constant adjustment to meet the changing needs of people. The challenges posed by national and international trends in agriculture, require the re-development of curriculum in AETI’s. This will ensure future skills needs. Topics such as food security systems, marketing, rural governance, nutritional analysis, project management, programme planning and evaluation should be considered as common core courses (Kirsten). Training content of marketing courses should include marketing strategies for subsistence farmers.
5.10 Conclusion/Summary

Since training is the process of acquiring specific skills to perform a job better, that means any gap in provision of training will hinder people from becoming qualified and proficient in doing their job. For training to be a powerful tool in poverty alleviation, income generation and job creation, it is essential that identified gaps be addressed by the national AET Strategy.
CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

“Agriculture in South Africa has a central role to play in building a strong economy and in reducing inequalities by increasing income and creating employment opportunities for the poor and resource limited producers, while also nurturing our natural heritages of scarce natural resources” (NDA Annual 1998). Poverty can be alleviated by increasing the agricultural production and by raising the income that will result in improved nutrition. AET is one of the powerful instruments to combat unemployment and poverty.

Training should include socio-economic and sustainable development. Training should be a continuous effort to enhance the farmer’s capacities to enable them to increase their production and solve various farming problems. To improve efficiency of training, the following recommendations were made towards the formulation of the national AET Strategy.

1. Training must focus on affordable technologies and cultural practices also to be appropriate for resource poor farmers.

2. Research and training linkage is indispensable for development and diffusion of appropriate technology that is economically, environmentally and socially acceptable.

3. Equipment of the Department of Agriculture’s training centres and providing necessary training materials to the trainers, for them to offer practical training to farmers, is essential.

4. Training needs to be problem focussed and technology orientated. It must be a demand-driven, action-based experience and keep up with new technology, i.e. adapt to rapid technological development and global structural change on a global scale.

5. Training methods should include a formal presentation, demonstration, informal discussion and opportunities to try out new knowledge and skills in the field.

6. Training for small-scale farmers to focus on production issues, marketing, financial management, farm management and conflict management. Marketing courses should incorporate identification of marketing channels and risk management strategies as training content.

7. An incentive system needs to be developed to give recognition for training successfully completed.

8. The Department of Agriculture needs to link training programmes with other small-scale farmer support programmes.
9. AETI’s need to provide a well-documented after-care programme to farmers.

10. Training should be in mother tongue of farmers due to the low literacy rate of subsistence farmers.

11. In-service training for the Department’s agriculturalists needs to include organizational development, computer, entrepreneurial, human resource management and life skills.

12. The Department of Agriculture should organize in-service training and send their agriculturalists for local, national and international training on agricultural development matters to update them on the latest technology.

13. The Department of Agriculture should provide bursaries to their agriculturists for their career development.

14. Trainers from different AETI’s need to be trained on curriculum development.

15. AET Strategy needs to bring together a range of AETI’s for interaction and meet the training demands of the clients.

16. Government should provide financial assistance to schools offering agriculture, for equipment, facilities and tools for doing agricultural practicals.

17. The Department of Agriculture should initiate sustainable agricultural related projects with schools were technical knowledge and skills in agriculture will be demonstrated.

18. Government should provide bursaries and scholarships to students wanting to pursue careers in agriculture.

19. The Department of Agriculture officials should provide practical training on agricultural technical matters to educators and learners according to their field of specialization as per agreement.

20. The Department of Agriculture should present agricultural career guidance to learners to increase awareness of learners about different careers in agriculture.

21. AETI’s need to include training on indigenous knowledge and appropriate technology for small-scale farmers.

22. Accreditation of training offered by different Agricultural Education and Training Institutions is essential.
23. AETI’s to change curriculum to adjust to challenges posed by national and international policy and trends in agriculture.

24. Communication and co-ordination be developed AET’s to facilitate joint use of infra-structure and facilities for training and to effectively use human resource capacity from different institutions as “guest trainer”.

**DEFINITION OF TERMS USED**

1. Commercial farmer – is a farmer who produces sufficient agricultural products for the market in order to earn an income from farming that will ensure acceptable living standards for him/her and him/her family. Commercial farmers produce mainly to market their product, specialize in a certain enterprises, use hired labour and hired managers.

2. Subsistence farmer – is a farmer who produces enough to provide for his needs and those of his family, but does not supply the market to a noteworthy extent. Subsistence farmers market surplus crops only, have diversified crop systems, labour supplied by his/her family with or without hired labour and the farmer himself/herself manages the farm.

3. Accreditation is a process of quality control and evaluation of development, efficacy and improvement of training institutions and/or training programmes according to pre-determined criteria and standards – a process that culminates in the handing over of a charter statement of proficiency by the accrediting body concerned.

4. An entrepreneur is an innovative person with a directed energetic drive with the objective of increasing economic wealth by being able to organize and control environmental variables, who move in areas of uncertainty creating a risk taking environment and who is capable of coping with stress, strain and uncertainty (Bosman, 1980: 3).

5. Education is the development of the human mind and it increases the powers of observation, analysis, integration, understanding, decision-making and adjustment to new situations (Flippo, 1961).

6. Training is the process of acquiring specific skills to perform a job better (Jucious, 1963).
BIBLIOGRAPHY


APPENDICES

SCHOOLS VISITED IN EASTVAAL REGION

Nkomazi High – Breyten
Zinikeleni – Carolina
Rev. S Nkosi – Fernie
Simtholile – Fernie
T D Nkosi – Fernie
Syabonga – Glenmore
Lususwana – Bettysgoed
Ligugu – Dondonald
L W Nhlapo – Dondonald
Mpuluzi High – Mayflower
Phambili – Mahogco
Lilanga – Diepsdale
Mzinoni High – Bethal
A D Nkosi – Bethal
Landbou Academy – Morgenzon
Takheni High – Elukwatini
Chief Jerry – Mooiplaas
Khuzulwandle – Tjakastad
Insika – Tjakastad
Lake Chris – Chrisiesmeer
Umzimvelo – Koolbank
Perdekop
Vukuzenzele – Perdekop
Subetgenba – Dirkiesdorp

SCHOOLS THAT COMPLETED QUESTIONNAIRES IN KANGALA REGION

Vezubuhle – KwaMhlanga
Phambili – Tweefontein E
Zidobehele – Tweefontein
Mbalenhle – Vlaklaagte No. 2
Tholuwazi – Weltevrede
Kwamanala – Moretele
Cibiliza – Kwaggafontein
Hluzingqondo – Kwaggafontein East
Malebo – Makometsane
Hlomane – Kwaggafontein
Mafu – Kwaggafontein
Sovetjheza – Siyabuswa
Hlanganani – Kameerivier B
Extension K – Extension K
Phumzile – Vlaklaagte No 1
Babutheni – Dr Moroka Municipality
CORRECTIONAL SERVICES VISITED IN EASTVAAL REGION

Bethal Correctional Services
Volksrust Correctional Services
Piet Retief Correctional Services

CORRECTIONAL SERVICES VISITED IN KANGALA REGION

Witbank Correctional Services
Middelburg Correctional Services

OTHER INSTITUTIONS VISITED

ARC – Groblersdal
Delta Pine – Seed Company – Groblersdal
Loopspruit Wine Company – Ekangala
Sasol – Fertilizer Company – Secunda
Potato Growers – Seed Company – Bethal
Wool Growers Association – Nooitgedacht
Agricultural Farmer’s Union – Nooitgedacht

DEPARTMENTAL SECTIONS

Extension
Home Economics
Non-formal Training

FARMERS ASSOCIATIONS IN EASTVAAL AND KANGALA REGIONS WHO ATTENDED STRUCTURED INTERVIEWS

Ipopeng – Marapyana
Pankop farmers – Pankop
Katjibane – Kalkfontein
Evergreen – Mdutjane
Siziswe – Mdutjane
Mphezeni – Mdutjane
Zenzeleni – Pieterskraal
Impilo yemaswati – Nkaba
Vulindlela – Siyabuswa
Vukuzenzele – Carolina
Sizanani – Carolina
Masina – Carolina
Tiphanzeleni – Dundonald
Vukuzithathe – Mayflower
Impucuko – Fernie
Simunye – Badplaas
Vukabasdha – Nhlanzatshe
Hlanganani – Mooiplaas
Timeleni – Chrissiesmeer
Siyalinga – Embalenhle
Esparanza – Secunda
Bambanani – Standerton
Tholulwazi – Bethal

EXISTING KNOWLEDGE AND SKILLS (TRAINING ATTENDED BY SUBSISTENCE FARMERS)

Crop production

- Vegetable production
- Field crop production
- Fruit production

Animal production
Farm Management
Human Management
Occupational health and safety
Cookery
Sewing
Permaculture

TABLE ON TRAINING REQUIRED BY SMALL SCALE FARMERS

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### EXISTING KNOWLEDGE AND SKILLS (TRAINING ATTENDED BY FARMERS)

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## SKILLS GAP AND TRAINING NEEDS OF EDUCATORS

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## EXISTING KNOWLEDGE AND SKILLS BY EXTENSION AND TRAINING OFFICERS

- No training attended
- Train the trainer course
- Marketing
- Soil fertility
- Computer
- TB & CA course
- Budgeting
- Bee-keeping
- Vegetable production
- Poultry production
- Public speaking/speech
- Laboratory practices
- Health related courses, i.e. Meat examination and abattoir inspection
- Animal related courses, i.e. Disease control, artificial insemination and animal branding
- Home economics practical and sewing
SKILLS GAPS AND TRAINING NEEDS OF TRAINERS

- Computer related courses, i.e. basic computer, advanced Excel, e-mail and internet
- Animal husbandry related courses, i.e. dehorning of livestock, livestock diseases, poultry and pig management
- Business related courses, i.e. agricultural economics and farm management
- Hydrophonic
- Sewing related courses, i.e. tailoring and designing
- Organic farming
- Presentation techniques
- Crop production
- Fruit production
- Meat inspection
- Food technology
- Veterinary Science

SKILLS GAPS AND TRAINING NEEDS FOR EXTENSION OFFICERS

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<td>• Plough setting</td>
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<td>• Boom sprayer</td>
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<td>• Calibration of planter</td>
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<td>Project related</td>
<td>• Project planning</td>
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<td>• Project management</td>
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<td>Soil related</td>
<td>• Soil conservation</td>
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<td>• Soil classification</td>
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<tr>
<td>Production</td>
<td>• Crop production (vegetables and field crops)</td>
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<td>• Animal production (dehorning)</td>
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<td>• Veld types</td>
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<td>• Net shading production</td>
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<td>Business skills training</td>
<td>• Budget control</td>
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<td>• Record-keeping</td>
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<td>• Marketing trends/prices</td>
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<td>• Marketing strategies</td>
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<td>• Financial management</td>
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<td>• Drafting of the business plan</td>
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<td>Skill</td>
<td>Category</td>
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<td>• Catering</td>
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<td>• Preservation</td>
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<td>• Value adding</td>
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<td>Sewing</td>
<td>• Designing</td>
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<td>• Drafting of the pattern</td>
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<td>Others</td>
<td>• Weaving</td>
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<td>• Interior decorating</td>
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<td>• Flower arranging</td>
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<td>• Report-writing</td>
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