

2. SKILLS REQUIREMENTS AND KNOWLEDGE SYSTEMS IN THE NEWLY RESETTLED LANDS*

2.1 Introduction

The land reform process has been successful in distributing land to the needy. The major challenge is to make the resettled land productive. The farmers need to be enabled to have all the vital elements of production in place. These have to be available at the right time, in the right place and in adequate quantities. Apart from the inputs, the farmers have to have proper skills and access to knowledge and information to manage the farms and be productive on a sustainable basis. This calls for imparting knowledge and skills to the farmers through the research and extension system. Therefore, this chapter will examine the research and extension capacity of public and private institutions in terms of meeting the demand presented by the sudden influx of new farmers created by the Land Reform Programme. Furthermore, the farmer training strategies, skills and knowledge imparting approaches will be discussed.

The approaches used in this study were desk studies, consultations and data analysis. Documents pertaining to various issues on farmer training and extension approaches were reviewed. The technical team recognised the importance of consultations with as wide a cross-section of the stakeholders as was possible. The major tools for consultation were discussions, and formal and informal interviews. Interviews were carried out with selected stakeholder institutions. Farmer interviews and/or interviews of their representative unions were used to identify the farmers' training needs at the local scheme level, as well as the constraints and opportunities for accessing information required for sustainable agricultural production and management.

The objectives of imparting skills to the new farmer are as follows:

- 1 To give the farmer the necessary technical skills and knowledge to enable him/her to utilise their land, capital and labour to the best advantage¹

* Original research and draft for this Chapter by Dr M Makhado

- 2 To develop the ability of the farmer, given the input resources available to him/her, to choose the enterprise that would give the most profit through the use of proper farm budgeting and record keeping;
- 3 To enable the farmer to assist with agricultural extension by passing on technical information to neighbouring farmers and by demonstrating good crop and animal husbandry practices; and
- 4 To develop confidence and self reliance among farmers to enable them to look for information by themselves e.g. input requirements, producer prices and other technical information without depending entirely on the extension agent.

Below are major areas of crop and animal production in which farmers have to acquire skills either through training or through access to information:

2.1.2 Crop production in general

Skills development for crop production should cover both theory and practice, including the following major areas: land selection (soil sampling); land preparation (use of implements); arable rotations, conservation farming, causes of erosion; crop varieties and their suitability for specific areas; composting, fertiliser types, rates and application; knowledge of common diseases and pests (use of herbicides and pesticides); planting (timing, spacing, plant population); thinning and cultivation; top dressing and scouting techniques; farm accounts and budgeting; harvesting, grading and storage; marketing; and record keeping.

2.1.3 Livestock

Livestock farmers have a different and specific set of knowledge requirements, pertaining to: breeds, animal selection, causes of low fertility, fattening (selection and management, supplementary feeding and rations), castration and de-horning, bull management and bullying, dipping and tick control, fencing, paddocking and dosing, disease control and

vaccinations, pasture management (legumes and grasses), cattle handling facilities (bale and race), training of oxen, and de-stocking. In addition, they seek business skills in the area of budgeting, marketing and record keeping.

The above inventory of areas in which skills are required suggests an urgent need for a system that will impart the right skills through training and/or dissemination of relevant information to the new farmers.

The farm workers previously employed on the former large-scale commercial farms (LSCFs) do possess skills that can be exploited by the new commercial farmers. Even though most workers were limited to the manual labour provision with no planning and managerial experience of farm business, they can pass on experience by providing the manual labour. Specific targeted programmes should be launched to tap skills and experience by encouraging new farmers to employ former farm workers.

2.2 Research and Extension Capacity

There are four public institutions that are currently responsible for research and extension. These are the Department of Agricultural Research and Extension (AREX); Department of Agricultural Engineering (AE); Department of Veterinary Services and the Department of Livestock Production and Development.

2.2.1 Department of Agricultural Research and Extension (AREX)

AREX was born after the amalgamation in 2002 of research and extension functions in the former departments of Agritex and Research and Specialist Services. This coincided with the peak of the Fast Track. The capacity of AREX and its relevant experience cannot meet the research and extension demands created by the influx of new farmers. Efforts have been made to increase the number of extension

agents from one per ward to 6 per ward. As a result, the extension agent-to-farmer ration has been reduced on average from 1:1000 to 1:600. The move to reduce this ratio is most welcome but the challenge beforehand is to train the extension agents on the job and make them effective in delivering knowledge and skills to the new farmer. The new farmers, without sound farming experience, require more frequent training and stronger linkage with knowledge and research systems. The immediate thrust is to design strategies that facilitate the new institutional strategies that facilitate the new institutional framework of AREX whereby research knowledge has to be delivered through extension. Part of this strategy involves the training of extension agents on the job and making them effective in delivering knowledge and skills to the new farmer.

The process of merging research and extension was quite sound but had its inevitable limitations and risks. These are noted below and need immediate attention for the merger to bear fruit:

- The expanded frontline extension worker base has no corresponding match of increased officers to provide adequate technical backstopping.
- The expanded extension worker establishment is not matched by intensified research capacity.
- The level of uncertainty created by the institutional reform resulted in high staff turnover particularly in extension. In 1999, 90% of the Chief Agricultural Extension Officers had 10-15 years' experience and in 2002 this was reduced to one year's experience. Vacancies for subject matter specialists are 50% in some branches. However, the challenge of how to train 6 000 extension workers on the job and make them competent to deliver an effective service to the newly resettled farmers who have no sound farming experience remains.

- There is need to move in fast and stabilise AREX by improving staff morale through better conditions of service. The geographic spread and increase in numbers of both commercial and small-holder farmers is an issue that limits their access to adequate extension services because the extension agents are not provided with sufficient transport.
- The training branch of AREX needs to be boosted and produce quality extension staff on the job to implement relevant farmer training programmes.
- There is a need for fine-tuning of the existing technology that applied in the former large-scale farms to suit the new farm sizes and scale of operations.
- The Land Reform Programme has created intensive land use systems in which agronomic considerations such as crop rotations might be difficult to adhere to. This calls for more subject matter specialists, such as soil analysts and agronomists, to meet the new requirements. AREX did not incorporate this requirement in its expansion programme.
- Before the Fast Track, seed production was done by the private sector but this sector has now cut down production quite significantly. AREX may need to take up this new challenge of seed production.
- The influx of new farmers, the majority of whom have no adequate knowledge on the impact of cross border movements of materials, calls for increased information dissemination on this issue by AREX.

2.2.2 Department of Livestock Production and Development (LPD)

The Department was formed in 2002. The Department has an establishment of 800 livestock extension workers who link up with veterinary services and

AREX. They operate through the livestock development committees which are the community entry point for all livestock development programmes. LPD is responsible for building the capacity of the committees responsible for infrastructure, animal production and health issues.

Furthermore, LPD has a challenge to come up with a database of the spread, quantity and skills of new A2 farmers who will lead in milk and meat production in the future. This database will form the basis for the design of appropriate support services by the Department. The success of such programmes depends on the capacity of animal production specialists in the field. The LPD is also responsible for general animal husbandry and consists of two divisions. The livestock production division is the outreach arm that supports the enhancement of animal production activities. The livestock development and schemes division links up with technology transfer, multiplication and breeding of animals and forage. It also looks after the breeding nucleus herds, gene banks for fodder and grass as well as new initiatives.

Access to infrastructure by farmers is of concern to LPD, particularly the distribution of heifers and access to bulls. There is need to hire staff and implement the outreach programmes in order to service farmers, particularly where artificial insemination programmes are designed to sustain the breeding programmes. The impact of the programme is dependent on the capacity of animal production specialists in the field, so that the growth of the livestock industry is assured. Since this is a newly formed Department, it needs adequate resources for equipment and vehicles at the outset.

2.2.3 Department of Agricultural Engineering (AE)

The Department of Agricultural Engineering was formed in 2002 to look after the engineering requirements of the new farmer in the areas of farm

power and machinery, farm structures and environmental engineering, produce handling and storage, training, and irrigation management. The high staff turnover that has occurred ever since its formation will make operations quite difficult. Engineers have to be deployed to the farms but the Department does not have adequate staff housing, offices, equipment or transport. The engineering activities of the Department are quite critical during the expansion phase of the Land Reform Programme. The personnel currently available is relatively adequate in terms of numbers but inadequate in terms of experience and ability to impart skills and knowledge to the new farmer. Table 2-1 below shows the staff establishment before and after the land reform programme.

Table 2.1: Staff Establishment Before and After Land Reform

Before land Reform		After Land Reform	
AGRITEX	2411	AREX	8008
R & SS	500 (Approx.)	Agricultural Engineering	725
Veterinary Services	800 (Approx.)	LPD	1052
		Vet. Field Services and Tsetse Control	1320*
		Vet Research and Public Health	56*
Total	3711		11153**

* To be approved

* The total projection is that the figure may increase to 15 000

2.3 Research and extension in Universities

A closer look into activities of institutes at the University of Zimbabwe (UZ) such as the Centre for Applied Social Sciences (CASS) and Institute of Environmental Studies (IES) reveals that research and knowledge generated at universities does not have much relevance to the practical production issues the new farmer is faced with.

The current research efforts by universities are not designed with farmers in mind but on goodwill or special liking of the subject by the researcher involved. Opportunities should be explored where research programmes are based on formal linkages with public institutions or farmer organisations.

2.4 Research and extension in the private sector

Some work is also undertaken especially by Farmers Unions and some private companies in the provision of extension services, advice and assistance.

2.5 The Research and extension linkage loop

Generating information and knowledge, and testing and adapting technology are critical in achieving increased agricultural production capacity, particularly where new farmers are operating under different input levels and resource endowment. The achievements of the public research institutions are well documented. Nevertheless shortcomings emerged in the early 1990's pertaining to budgetary constraints, which gave rise to dwindling research capacity, weak linkages with other research institutions and the gap between communal farmers needs and those of researchers who may have pre-set agendas and be concerned with immediate technical results. On the other hand, knowledge services for farmers are critical for enhancing productivity. Technology and knowledge are essential at the outset for an effective Land Reform Programme. Extension strategies should be responsive to the immediate and long term needs of the new farmers whose productivity is expected to create a vibrant agricultural sector, thereby reviving the economy. The public sector institutions provide the bulk of the extension services and their performance declined in the 1990's due to fiscal constraints and poor linkages with research. In response to these constraints, some institutional reforms described in sections 3.1 to 3.3 took place in 2002, which were designed to revive the research and extension linkages. The institutional development process has its risks and opportunities in service delivery performance of the newly formed departments. There is, therefore, need to pay attention to the organisational interface between farmers and service providers. Within this context, the following are observations on how the institutions can craft this interface to ensure the expected responsiveness to the land reform and farming community.

Firstly, there is need to establish a system that generates more information based on research in response to the different constraints the new farmer encounters. Alternative technology ought to be generated to address production problems brought about by constraints, such as shortage of inputs. New products for specific problems require more experienced personnel, more analytical methods, less blanket and packaged techniques, more new approaches to outmode the old. The bulk of current research and extension messages are based upon the use of high input of inorganic fertilisers and chemicals that are not locally available. There is, therefore, need to scientifically assess the previously sidelined initiatives that use locally available resources and technical knowledge. This change in approach calls for experienced research and extension specialists with a strong and innovative extension agenda. However, the majority of frontline extension workers in AREX, AE and LDP have very limited experience to embark on this new approach.

The above scenario implies that the new farmer would need new technology that would enable them to produce new crops. As a result, the new farmer would require new markets in the near future which can absorb the new commodities that the new farmer can easily produce, most likely with lower technology levels that are less dependent on imported input requirements but are economically viable and environmentally sustainable. This calls for intense market research, quick production models and work-study information. Therefore, the research and extension linkage has to be expanded to incorporate market information systems and policy.

During the first season of the Fast Track programme, the Government had to support new farmers in various ways, resulting in farmer reliance on what the programme provided. The research and extension system had to respond to these provisions where the issues of availability, access and affordability of inputs by the farmer were not paramount. This intervention has to some extent killed the drive, particularly in the new A1 farmer, to procure resources without looking forward to handouts from Government.

The current research and extension system was developed over a long period of time for large-scale production systems. The scenario that is evolving now indicates that it would be erroneous to adopt and adapt the same production practices

because their prerequisites are no longer existing. Thus a programme is needed to quickly refocus the research and extension institutions as well as redesigning the institutional framework to meet the new demands.

The sustainability challenges of the public institutions engaged in research and extension activities may become an issue in the long term giving rise to poor service provision. The commercial farmer base has increased, but with less funding and non-existent farmer organisations in the newly resettled areas, extension services have stretched their capacity to a level where they may not provide their services as expected without institutional strengthening. The private sector research and extension system, particularly in the CFU, has already down-sized its operations to 50% due to its diminishing farmer base and political expediency. However, there is need to tap the skills and experience among the CFU members while it is still available.

2.6 Training Needs for Farmers and Extension Agents

Experience has shown that the extension service department is the best institution to link with the farmers.

Farmer-to-farmer training is a recommended communication tool for transferring management concepts.

Proper and appropriate training of farmers or demonstration of new technology is an important prerequisite to farmer managed production systems. Farmers must manage and organise themselves into legally recognised institutions that are credit worthy and raise their own collateral. Government assistance might be required here in providing favourable conditions for borrowing through a Government controlled lending institution. Whether farmers are managing their scheme or not, they still need some form of extension support and it has been proven in Zimbabwe that intensified provision of extension services after independence in the 1980's led to a boost in small-holder farmers' production levels.

- **Farmer mobilisation:** The staff complement of 11 000 in the Agricultural Services Division should be strategically deployed into the resettlement areas to exploit new opportunities for application of new technology such as irrigation, mechanisation, crop handling and storage as

- tools to enhance farm productivity and farmer production potential. Furthermore, the frontline extension agents have to encourage farmers to work with farmer organisations and commodity associations. These organisations constitute the leadership within the farming sector. The production potential of the resettled farmers can be enhanced when farmers are involved in creating production targets that are achievable. The idea of planning together with the people will have to prevail and the extension workers should supervise these organisations to ensure a sound basis for viable agricultural production.
- **Farmer training:** Apart from the day to day farmer training by extension workers on technical issues, it is most important that farmers are trained on business management.
- **Publicity of services:** The Government has put in place a massive programme for agricultural production support, comprising the irrigation rehabilitation programme, the input support scheme, the tillage programme, the livestock development programme and the new farmer programme on the national radio and television. The extension service has to take up these programmes in its training and mass media campaigns to ensure that farmers and extension workers are aware of such facilities for farmer development. The MoLARR and its departmental publicity sections must ensure that farmers know where to access these inputs.
- **Trials and demonstrations of appropriate technology:** The extension service has to be more aggressive in demonstrating appropriate technology to the farmers. The skills training methodology must be based on practical demonstration in the same environment the farmer is operating.

2.6.1 The role of the formal training institutions

The Land Reform Programme has created demand for qualified graduates and diploma holders to assist

the newly resettled farmers in their new farming operations.

There is a need for experienced researchers, extension agents, agricultural engineers and farmers who can assist the newly resettled farmers.

2.6.2 Farmer training institutions

2.6.2.1 Kushinga Phikelela

Government has set up a training programme at Kushinga Phikelela to play an important role in the development of the agricultural sector in Zimbabwe by providing the bulk of the key skills needed in production of food and exportable surpluses. The National Farmer Training Board (NFTB) was launched in January 1999 and has since developed the Young Commercial Farmer Training Programme (YCFTP) and the Practising Farmer Training Programme coupled with the Training of Trainers Programmes. In addition, the programme has established the Information Centre to develop, package, reproduce and disseminate farmer education and training materials.

The last two years saw a number of changes in the structure of the agricultural industry, resulting in significant entry of indigenous Zimbabweans aspiring to acquire farming skills and to produce commercially under the land and agrarian reform programme.

The Commercial Farmer Training Programme at Kushinga Phikelela takes 40 farmers per annum with a minimum of 20 years of age. The programme courses include natural region targeted compulsory and optional modules, covering crops, livestock, farm machinery and equipment, agro-business management, environmental conservation. The use of existing training centres, facilities, trainers and resource persons from strategic organisations in the private and public sector, within and outside agriculture, has been adopted. The NFTB was mandated to develop project proposals to solicit financial support

from the private sector, donors, farmer organisations, finance institutions, trainee farmers and foreign currency retention schemes. Given that Kushinga Phikelela is already serving as a national centre, the NFTB was mandated to identify another seven strategic provincial training centres where training should start as soon as resources become available.

The objectives of the commercial farmer training programme at Kushinga Phikelela are geared towards addressing the challenges confronting both the existing farmers and land reform beneficiaries (MoLARR undated). The programme makes training the focal point for mobilisation and organisation of farmers for the establishment of a more efficient and effective agricultural production system, and linking farmers with financiers, input suppliers, technical and marketing service providers.

The Kushinga Phikelela farmer training programme has been a giant step in the right direction but the following areas need to be looked into:

- The farmer training programme could be shifted from a centralised to a decentralised modular training system, involving selected institutions accessible to the majority of the land reform beneficiaries aspiring to acquire skills to farm commercially;
- The NFTB could replicate the Kushinga Phikelela training model by identifying strategic provincial satellite training centres where training should commence as soon as resources become available;
- The decentralised programme could be managed by the NFTB in collaboration with other relevant institutions in terms of providing resource people and trainers;
- Resource mobilisation could be geared to meet initial capital outlays for trainee farmers for the establishment of minimum infrastructure such as animal housing and handling facilities, irrigation and purchase of livestock, and enhancing mobility of the trainers and coordinators to ensure effective supervision of on-farm training components;

- Strategic companies in the private sector could be invited to participate and contribute towards the land and agrarian reform through provision of resources and expertise to augment Government efforts in farmer training; and
- The NFTB could engage experts to work out theoretical and practical course content details and logistics of the implementation of college and farm modules and resource requirements for implementation of the proposed programme nationally.

It should be noted that there is a whole range of similar farmer training institutions in both the private and public sectors. These are given in Table 2.2 below. There is need to create some mechanism through which these institutions share skills and experiences thereby establishing some formalised working relationships and linkages among themselves.

Table 2.2: Farmer Training Institutions and Their Output

Farmer Training Institution	Annual Trainee Output
Blackforby	35
Trelawney	38
Dozmary	30
Wensleydale**	780**
Nyamazura	25
Cotton Training Centre	45
Nyamasinga**	780**
Watershed	25
Kushinga Phikelela	40
Total	1798

**** Wensleydale and Nyamasinga run short courses at 30 trainees each on average per week for 26 weeks per year.**

2.6.2.2 Ministry of Youth, Gender and Employment Creation

The Ministry of Youth Development, Gender and Employment Creation runs vocational training programmes for youths. Currently there are 60 vocational training centres operating in the country. The major objective of the programme is to empower youths to participate in national development. To date, two farms per province have been allocated for use under the training programme. The target is to have two farms per district. All vocational training centres have an agricultural component and the annual output of trained youths in agriculture is 3 000. After training, the youths are fully fledged to set up a business enterprise in farming. The Ministry has a mechanism to monitor and trace whether the trained youths are fully engaged in some agricultural activity. However, the major constraint is availability of funds for establishing agricultural business enterprises after training. The trainers in these centres are agricultural diploma holders and this ensures high quality input into the training programme.

This training programme has great potential in imparting skills to the youths in agricultural production and should be supported by providing farms for use during training. More training centres should be established at district level.

2.7 Recommendations

The following recommendations were derived from the study findings.

2.7.1 Policies and strategies

In view of the prevailing droughts in the past two decades and the imperatives of agrarian reform, irrigation development is now a national priority and must be placed fairly high on the national agricultural development agenda. Therefore, farmer training and the process of imparting skills should be deliberately

targeted at, and biased towards, irrigation development and management . This then calls for a legal instrument to be put in place in the form of an Irrigation Act that would guide and control all irrigation activities across the board.

Government should create an enabling environment for investment by the private sector and institute credit policies that encourage borrowing for agricultural development by new farmers.

Government should put in place an enabling environment including provision of targeted funding to strengthen institutional arrangements for a speedy development of the agricultural sector.

There is a need to set up a system that regularly collects and collates accurate national, provincial and district data and information on what the farmer skills and training needs and requirements are for strategic planning.

2.7.2 Institutional framework

There are a number of extension and research institutions in both the public and private sectors which are providing services to the farmer. However a team approach is called for to minimise duplication of effort and tap and exploit the potential and capacity inherent in these institutions. Some consultative and coordinated forum for interested parties and supportive institutions has to be created to harmonise the current situation.

There is need to build and strengthen the service delivery capacity of the public institutions. Resource mobilisation, infrastructure development, equipment, transport facilities and communication are required for all the newly born institutions if they are to be effective in reaching out to the new farmer with the needed extension services.

2.7.3 Skills and training

Farmer training facilities similar to the Kushinga Phikelela model should be developed and expanded at provincial level. Universities and agricultural colleges should develop and run short specialised courses for A2 farmers. Such initiatives should be supported by public institutions.

Information dissemination through village libraries and ward information kiosks should be established and strengthened by supplying them with appropriate, timely information collated for the local farmer.

2.7.4 Agricultural production systems

The private sector should be encouraged to play a more significant role by supporting the mainstream programmes, such as input distribution, credit extension, farmer training and information dissemination. This is part of the business that is expected to grow in the reform process. Business should not be restricted to the monopoly of formal institutions such as parastatals and commodity associations. The reality is that the informal sector and small to medium businesses have the potential to grow and create employment, thereby providing alternative livelihoods in rural communities.

Research institutions must be supported to develop alternative initiatives such as, for example, indigenous knowledge for pesticides. Inorganic fertilisers could be substituted by compost manure developed on site.