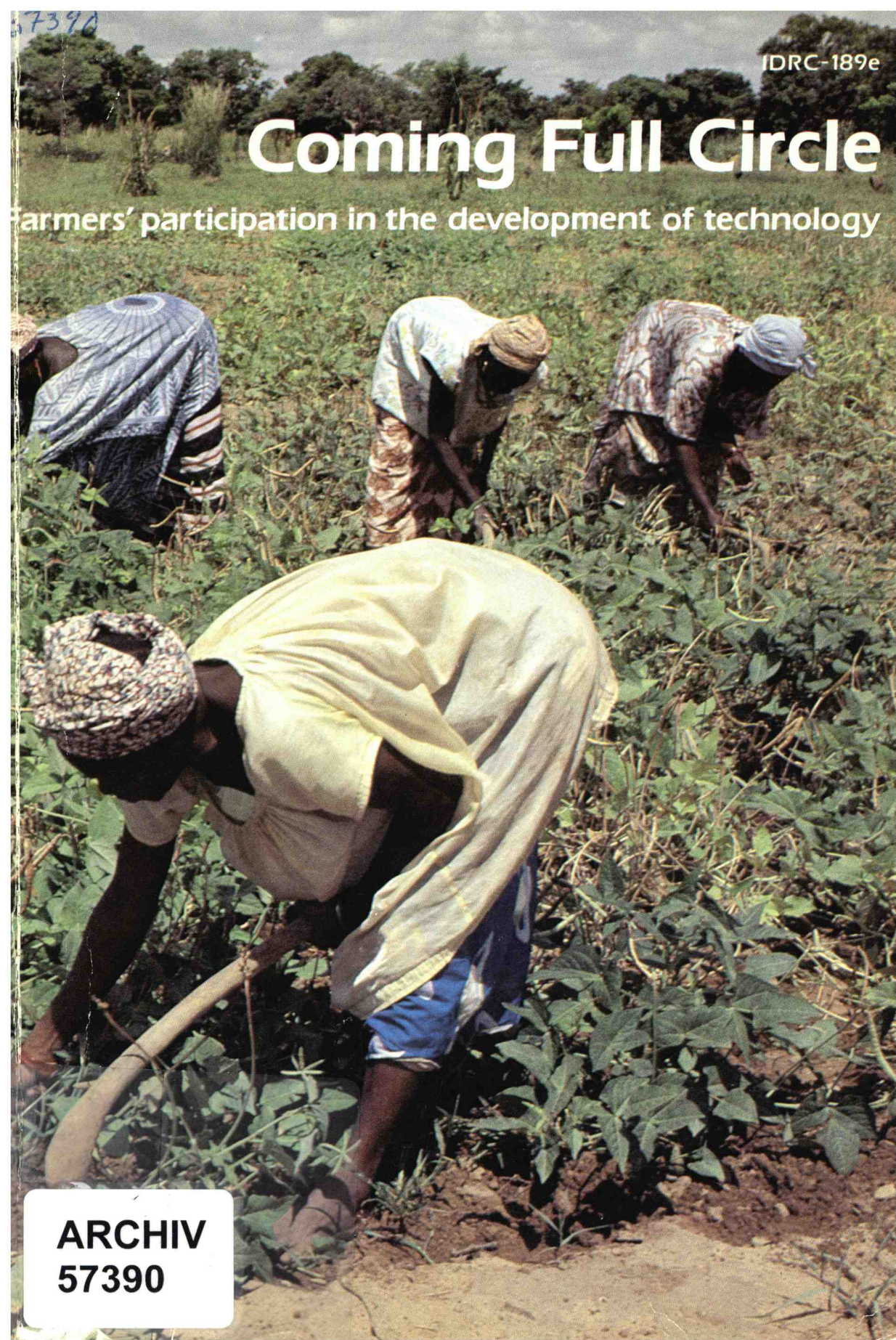


# Coming Full Circle

Farmers' participation in the development of technology



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***Coming full circle: farmers' participation in  
the development of technology***

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## **Abstract**

Involving farmers in identifying the constraints to rural agriculture and in designing measures to alleviate them is the subject of this publication, which resulted from a meeting, held in Ouagadougou, Upper Volta, 20–25 September 1983. Agronomists, economists, anthropologists, and others seeking to get the most from research efforts discussed the pitfalls of assembling packages that are sound technically but have some essential flaw because the developers have overlooked some crucial constraint at the farm level. The subject is one that is receiving much attention currently as agriculture in developing countries has failed to net major increases in production despite thousands of dollars invested in research and optimistic claims that improved varieties, techniques, equipment, etc. have been developed. The gaps between results on research stations and those on farms in the Third World have prompted some researchers to view the farmers' conditions as the real laboratories. Why, how, where, and when to get farmers involved in research are the focus of this document, and the degree to which researchers and the agencies they represent have been able to listen and work with their new partners varies, as is clear from the 11 papers and the commentary that follows them.

## **Résumé**

La participation des paysans à l'identification des problèmes agronomiques et à la recherche de leurs solutions est le sujet de cette brochure qui rapporte les états d'un séminaire tenu à Ouagadougou (Haute-Volta) du 20 au 25 septembre 1983. Afin de mieux exploiter les résultats des recherches, des agronomes, des économistes, des anthropologues et d'autres personnes intéressées ont discuté du danger de préparer des blocs agronomiques, solides sur le plan technique, mais possédant des vices fondamentaux, les développeurs n'ayant pas pris en compte certains obstacles critiques au niveau des fermes. Ce thème est largement débattu aujourd'hui alors que la production agricole stagne dans les pays moins avancés malgré l'injection de milliers de dollars dans la recherche et les espoirs mis dans la création de variétés, techniques et équipement améliorés. La différence entre les résultats obtenus dans les stations de recherche et ceux recueillis sur les fermes ont conduit des chercheurs à reconnaître que la ferme même constituait le vrai laboratoire. Le thème principal de cet ouvrage qui se dégage des onze communications présentées et des commentaires qui suivent, est donc de déterminer quand, où, comment et pourquoi les fermiers doivent participer à la recherche et aussi, jusqu'à quel point les chercheurs (et les organismes qu'ils représentent) ont su être à l'écoute des paysans et travailler avec eux.

## **Resumen**

La participación de los agricultores en la identificación de las limitaciones a la agricultura rural y en el diseño de medidas para superarlas es el tema de esta publicación que resultó de una reunión celebrada en Ouagadougou, Alto Volta, del 20 al 25 de septiembre de 1983. Agrónomos, economistas, antropólogos y otros interesados en obtener lo mejor de los esfuerzos investigativos, discutieron los problemas de producir paquetes técnicamente válidos que no obstante presentan fallas básicas porque sus diseñadores han perdido de vista alguna limitación crucial a nivel de la finca. El tema recibe actualmente mucha atención debido a que la agricultura de los países en desarrollo no ha podido aumentar la producción pese a los miles de dólares invertidos en la investigación y a las optimistas voces que proclaman haber desarrollado variedades, técnicas, equipo y otros elementos mejorados. La brecha entre los resultados de las estaciones de investigación y aquellos de las fincas del Tercer Mundo han hecho que algunos investigadores consideren las condiciones de los agricultores como los verdaderos laboratorios. Por qué, cómo, dónde y cuándo involucrar a los agricultores en la investigación es el tema central de este documento, y el grado en que los investigadores (y los organismos que representan) han podido escuchar y trabajar con sus nuevos socios varía como lo demuestran los 11 trabajos del libro y el comentario final que los sigue.

*Farmers' participation in the development of  
technology*

# COMING FULL CIRCLE

*Editors: Peter Matlon, Ronald Cantrell, David King, and Michel  
Benoit-Cattin*

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Zimbabwe has a productive but strongly dualistic agricultural sector. Approximately 5000 large-scale farmers produce some 94% of marketed agricultural output and support directly about 1.8 million Zimbabweans. These farmers occupy  $1.66 \times 10^7$  ha of land (known as commercial farming areas), predominantly on a freehold basis. By contrast, the remaining farming areas produce only some 15% of total measured agricultural output, while providing subsistence for about 4.5 million people (Chavunduka 1982). These latter (known as communal farming areas) cover some  $1.63 \times 10^7$  ha and are occupied by smallholder producers under a variety of traditional tenure arrangements.

## ***Research design and implementation in the Sebungwe Region of Zimbabwe***

***Malcolm J. Blackie, Department of Land Management, University of Zimbabwe, Harare, Zimbabwe***

In the early days of European settlement in Zimbabwe, agricultural production was an important source of income for black small-scale producers (Palmer 1977). Within a decade of the first major influx of settlers, discrimination in terms of access to markets and land progressively debilitated the capacity of the smallholder sector to compete with the emerging large-scale agricultural sector. In consequence, by independence in 1980, many commercial lands were at a low level of agricultural productivity. Since independence, an important element of agricultural policy has mobilized the unexploited potential in the commercial areas (Blackie 1982).

In the early days of European settlement in Zimbabwe, agricultural production was an important source of income for black small-scale producers (Palmer 1977). Within a decade of the first major influx of settlers, discrimination in terms of access to markets and land progressively debilitated the capacity of the smallholder sector to compete with the emerging large-scale agricultural sector. In consequence, by independence in 1980, many commercial lands were at a low level of agricultural productivity. Since independence, an important element of agricultural policy has mobilized the unexploited potential in the commercial areas (Blackie 1982).

The communal farming areas of Zimbabwe typically lie in the less favourable agroecological regions. They exhibit considerable diversity in terms of resource availability, human populations, and infrastructure. The failure of successive governments to devote resources toward developing the lands has resulted in a marked and increasingly critical decline in the productivity and welfare of the inhabitants. This paper describes work initiated by the Department of Land Management at the University of Zimbabwe in a region containing some of the least-developed communal farming areas in Zimbabwe.

The research program undertaken by the university has three objectives:

- To expand the on-farm field research and training capacity of the university. The program is intended to assist the university in making a major contribution to on-farm research development in Zimbabwe and in setting up community-based programs.
- To contribute to the training of experienced field agriculturalists. Zimbabwe currently faces a critical shortage of agricultural scientists with experience in operating independently in the field, in controlling

staff and budgets, and in directing and coordinating research. The program is aimed at providing an environment in which young qualified Zimbabweans can acquire the skills necessary for the expansion of the national agricultural research system into the communal farming areas.

- To foster effective linkages between the university, farmers, and development agencies.

Before independence, most agricultural scientists were trained in South Africa, with an orientation primarily to serve large-scale farmers. The University of Zimbabwe played a minor role in the support of the agricultural sector. Following independence, the demands on the university to produce graduates trained to meet the needs of the Zimbabwean agricultural sector have increased substantially. The Department of Agriculture at the university has been upgraded to a faculty with major increases in staff, budgets, and student intakes. However, if the university is to support national policy and address the problem of increasing productivity from the communal areas, it needs to establish its own clientele among smallholder producers. There exist, in Zimbabwe, well-established research and extension services and the need was not to duplicate work undertaken by these agencies but to complement and support their activities.

The program has been designed to evolve through two phases. The first phase, which is the subject of this paper, involves the collection of baseline data and the definition of priority research. The second phase will involve the design and implementation of pilot projects. The phases will not be strictly sequential; experience elsewhere suggests that there will be considerable interaction between the two phases. The overall concept draws heavily on the experience with *caqueza* in Latin America (Zandstra et al. 1979).

### ***The Sebungwe region***

The Sebungwe region (Fig. 1) lies in northwest Zimbabwe and extends southward from Lake Kariba. The region is administered by four local government district authorities, notably Binga, Gokwe, Kadoma, and Kariba. Government services to the region are provided by three provincial authorities: Mashonaland West, Matabeleland North, and Midlands. The region is  $3.66 \times 10^4 \text{ km}^2$ , of which 69% constitutes communal farming areas, 17% the National Parks and Wildlife Estate, 9% freehold smallholder farms, and 5% forest areas. Infrastructure throughout the region is poor, with large areas of inaccessible rugged terrain occupied mainly by wildlife. Tsetse fly occurs through much of the region, and agriculture is based primarily on subsistence farming. Where cattle are precluded by tsetse infestation, hand-hoe cultivation is the norm.

Before 1956, few people lived in Sebungwe. However, since that date, population in the region has expanded enormously. First, the valley Tonga, who traditionally farmed the alluvial soils along the Zambezi river, were forcibly resettled because of flooding of their homes after the construction of the Kariba Dam in 1957. Some 21 000 people on the Zimbabwe side of the Zambezi were resettled in this exercise; all were relocated in the northern part of the region (Scudder 1982). Second, a program of both voluntary and compulsory resettlement in the southern part of the region was commenced.



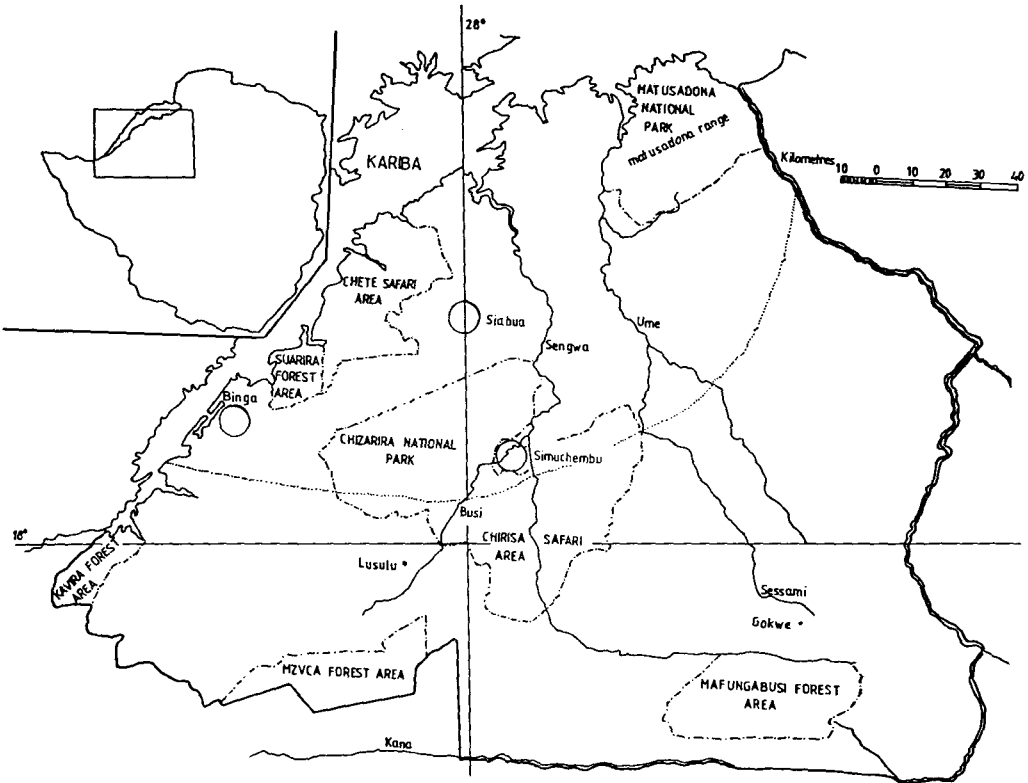


Fig. 1. The Sebungwe Region, Zimbabwe, is the focus of a farming-systems development project.

The volunteer settlers came from overcrowded communal lands in other parts of Zimbabwe. Political activists were forced to settle in the area before independence in 1980. Today, the population is about 304 000 people, and the estimated population growth rate between 3.3 and 3.6% annually (Falkenhorst 1983).

The research program described in this paper deals mainly with the peoples of the northern part of the Sebungwe. The valley Tonga occupy the areas with the poorest infrastructure and agricultural development potential. A further forced resettlement of these people is unlikely to contribute to their welfare so that it is essential to improve the productivity of the areas they currently inhabit, although voluntary resettlement may provide a partial solution in some cases. Studies of low-income communities throughout the world that have been forcibly resettled show the majority of the people concerned to be worse off during the transition period. This period is rarely shorter than 2 years and may last a whole generation (Coulson 1971; Hansen and Oliver-Smith 1982). Scudder (1982) observed a strong contrast between the Zambian and Zimbabwe sides of Lake Kariba. In Zambia, resettlement was accompanied by a major tsetse-control program, together with substantial investment in educational facilities, fisheries development, and appropriate agricultural research. In Zimbabwe, before independence, the authorities did not develop the infrastructure or invest in the region. The valley Tonga now occupy an area of markedly different, and lower,

Table 1. Estimated crop yields in the Sebungwe region, 1979–80 (kg/ha).

	Gokwe	Binga	Kariba
Maize	1238	364	546
Sorghum	792	300	546
Edible beans	446	—	—
Bulrush millet	619	137	273
Finger millet	628	—	—

Source: Second crop forecast, 1979–80 season, AGRITEX.

agricultural potential than their traditional homes and have endured a quarter century of neglect. The outcome has been apathy and dependence (Scudder 1982).

Land zoned for use in agriculture accounts for 78% of the total region. Most agricultural development, however, has been confined to the southern parts, mainly because of tsetse infestation in the north. However, the available data suggest that there are only  $2.0 \times 10^3 \text{ km}^2$  of high-potential arable land and  $5.0 \times 10^3 \text{ km}^2$  with medium potential; the area of low potential is  $9.0 \times 10^3 \text{ km}^2$  (ARDA 1982). These data are derived mainly by interpretation from geologic and vegetation mapping, and no extensive soil surveys are available.

The evidence from Zambia suggests that these data seriously underestimate the agricultural potential of the area. There is, therefore, a need to undertake field verification of the existing data base so as to arrive at a scientifically sound estimate of agricultural potential.

Crop yields are typically low (Table 1), and the last two seasons have seen an almost total crop failure in the northern part of the Sebungwe. Inputs, such as fertilizer and agricultural chemicals, are not easily available. The light soils that characterize much of the area are susceptible to erosion and are of low fertility. In the tsetse zones, the cultivated area per family is about half that in the tsetse-free areas, thus further compounding the production problems of families (Falkenhorst 1983).

With the exception of the capital-intensive, large-scale Sanyati scheme in the south of the region, there has been virtually no irrigation development. Falkenhorst (1983) reports some 26 plot holders on 8 ha of irrigated land in the entire region.

Zimbabwe has been zoned into five regions of differing agroecological potential, with regions IV and V being defined as suitable only for extensive livestock production (Table 2). The Sebungwe lies in natural regions IV and

Table 2. Livestock numbers in the Sebungwe region, 1981–82.

Area	Cattle	Pigs	Sheep	Goats	Donkeys
<b>Binga</b>					
Manjolo	18000	400	4000	25000	1000
Siabuwa	82	61	1200	700	16
<b>Gokwe</b>					
Gokwe	152000	4000	18000	108000	17000
<b>Kadoma</b>					
Sanyati	16000	133	46	5000	108

Source: Department of Veterinary Services.

V (with the exception of small areas of natural region III around Gokwe village and Chisarira National Park). The official livestock-marketing system deals almost exclusively with cattle for slaughter. In the farming systems of the area, cattle are so important for draft power that they are rarely slaughtered or sold, with sales being about 2–6% of the herd. This contrasts with an offtake of 15–20% in the neighbouring commercial farming areas (Blackie 1983; Jackson, Blackie, and de Swardt, forthcoming). Field data from the present season indicate negligible sales of other livestock, although an offtake of about 10% of the goat flock could materialize if marketing facilities were available.

The region also includes some  $6.07 \times 10^3$  km<sup>2</sup> of wildlife and safari areas. Falkenhorst (1983) estimated the revenue from hunting accruing to the district councils in the region in 1983 as Z\$331 000 (Z\$1 = US\$1). Because of the poor access roads and facilities, the number of tourists viewing game is insignificant except in Matusadona National Park in the northwest. The national parks in the Sebungwe have been running at an increasing deficit since 1979 (Falkenhorst 1983). The interaction between wildlife and agriculture has also caused increasing friction between the farmers, the Department of National Parks and Wildlife Management, and the safari operators. Elephants persistently raid crops, particularly in areas contiguous to wildlife reserves. Poaching of game to supplement food supplies and also for income is common.

### ***The research agenda***

Because the Sebungwe is an area of low agricultural productivity, it offers major technical and socioeconomic challenges to agricultural researchers, and a unique opportunity for the University of Zimbabwe to initiate an interdisciplinary research program, aimed at mobilizing agricultural development in the region. The evidence from Zambia suggests that the overall potential of the area is much greater than conventionally assumed in Zimbabwe. Although official development agencies are active in the region, field officers are faced with considerable problems in operating in large, remote areas with little research support. The production systems of the region are poorly understood, and the agroecological potential varies widely. There is little technology that has been adequately tested in the region, and empirical data on production constraints are almost totally absent (Weinrich 1977; ARDA 1982; Scudder 1982). The university's participation in the development of the area was, therefore, perceived by most government agencies as complementing their work. At a recent seminar on development in the region, a senior government official responsible for development commented (Mudenda 1983):

... we are happy today to see the beginning of a close association in development through recent attempts by the University to explore the agricultural potential of Binga district in particular and the Sebungwe region in general. This giant step in development has been taken by the University three years after our independence and a quarter of a century since its inception. . . . Through [the efforts of the Faculty of Agriculture] we hope the people of Binga will acquire agricultural skills which will enable them to feed themselves . . . and produce surplus food for



*Typical Tonga homestead in the Sebungwe Region, Zimbabwe.*

sale. . . . But let me caution . . . against purely considering Binga district as a guinea pig research station. The results of research must flow into practical development of the area in spite of the fact that these results do take a long time to collate and publish. Our research must be development orientated even if . . . from the pursuit for academic excellence.

The initial impetus for the university involvement in the Sebungwe came from two sources. First, the Department of Land Management had been surveying small-scale cotton producers south of Gokwe village since 1980 and was already involved in on-farm research in the region. Second, the Agricultural and Rural Development Authority (ARDA) held a workshop, which I attended, in 1982 to review the current state of knowledge regarding the area (ARDA 1982). The workshop revealed major deficiencies in data required for planning in the region as well as an absence of suitable technology for agricultural development.

Two alternative strategies for the development of the region emerged from the workshop. The first, the wildlife strategy, was based on the assumption that the agricultural potential of the region was totally inadequate to support its human population. The economy of the region should, therefore, be based on the sustained harvest of its wildlife resources. The inhabitants of the area would rely mainly on the processing of game products, sale of handicrafts, and subsistence agriculture for their income. The capital for the social infrastructure of schools, clinics, and roads would be generated from safari hunting and tourism. The second strategy, the agriculture strategy, assumed unexploited agricultural potential. Agriculture was identified as the sole major source of income capable of supporting the increasing population at a reasonable standard of living (Scudder 1982; Falkenhorst 1983). Following the ARDA workshop, the Department of Land Management expanded its research in the region in cooperation with

government agencies involved in planning and development activities. The outcome was a research agenda linked directly to priorities identified by the inhabitants of the Sebungwe and by the various government authorities involved in development.

In August 1982, I undertook an extensive reconnaissance survey with assistance from Thayer Scudder who, together with Elizabeth Coulson, had undertaken a long-term study of the valley Tonga in Zambia, commencing just before the construction of Kariba Dam (Coulson 1960, 1971; Scudder 1962; Coulson and Scudder 1975; Scudder and Coulson 1979, 1980). The survey had no formal structure beyond a geographical focus on the Sengwa River basin. In planning the survey, we realized we had neither the time nor the resources for a comprehensive coverage of the region. Thus, we decided to enter the region through Gokwe village and follow one of the major rivers, the Sengwa, down to Lake Kariba. Lack of water forces people to congregate along the large rivers, and most agricultural production is on the alluvial soils bordering these rivers. The Sengwa also runs through and alongside important wildlife and forestry areas. This strategy, therefore, allowed the investigation of conflicting land- and water-use systems and development opportunities throughout the river basin. The survey was undertaken mainly by road, with stops of several days being made in various key areas. Scudder (1982) described the survey procedure:

Throughout the field trip, our procedure was to discuss Sebungwe problems with as many people as possible. Whether travelling by land or water, we were constantly stopping to talk with people we met along the way, including those asking for lifts and those we sought out in fields, villages, stores, schools, fish camps, safari camps, hotels and government offices. In this way, information was systematically collected from several hundred people including farmers, fishermen, school children, teachers, storekeepers, safari and hotel operators, chiefs, district councillors and government officials. Discussions were also held with officials in Harare during March, July and August, 1982.

The preliminary survey helped define the research agenda. It confirmed my impression from the ARDA workshop that there was an appropriate and useful role for the university to play in the development of the region. It also demonstrated that agricultural development should be the top priority in the region. The survey enabled me to obtain a clear understanding of the differing perspectives on development priorities held by farmers, government officials, and the private sector (primarily safari and hotel operators and storekeepers). The research agenda could be planned in the light of first-hand experience of the logistical problems of operating in a remote, poorly serviced part of the country. Finally, Scudder provided valuable input for the research agenda, drawn from experience of the successes and failures on the Zambian side of Lake Kariba. The preliminary agenda was to:

- Determine appropriate dam sites for water development and irrigation through air-photo interpretation combined with ground survey where indicated;
- Identify from Lake Kariba charts and aerial photographs appropriate areas for recessionary cultivation, grazing, and fisheries development;
- Consult geological maps of the Sebungwe vegetation maps and aerial

photographs to identify the arable soils that could be subject to more detailed soil surveys;

- Assess the agricultural productivity of the Siabuwa area, which has been cultivated for generations by the densest population within the northern Sebungwe. Surveying the potential and constraints for agricultural development would provide valuable information on the fertility of the entire range of shales that occur extensively throughout the Sebungwe;
- Survey the nature of the valley peoples' production systems at the household and community level in different areas;
- Investigate the potential for wage employment for local people within the Sebungwe region and in the adjacent townships of Hwange, Kamativi, and Kariba;
- Survey marketing practices for goats, turkish tobacco, and other local produce and introduce pilot marketing schemes;
- Form development strategies for specific areas in which human activities currently conflict with park and game-management areas.
- Survey the health status of a carefully selected sample of village communities to improve programs of preventive medicine;
- Design surface and subsurface dams and pumping devices suitable to Sebungwe conditions; and
- Introduce on-farm trials of improved agricultural technologies.

The next procedure was to review this agenda with professional colleagues at the university, in appropriate government ministries, and in both national and international agencies involved in rural-development activities. The university had no previous experience of operating a major program of this nature. There were communication channels to be set up between the university researchers, farmers, and development agencies active in the Sebungwe. Practical, logistical, and technical problems were involved in operating remote from the university. Although the Department of Land Management could support some initial fieldwork, the extensive and long-term commitment required outside funding. Support at the top levels of both government and the university would be essential if the necessary resources for a sustained program were to be sought. The policy adopted was to invite participation from other researchers at the university within the guidelines of the research agenda. The first step was to initiate some relatively straightforward projects involving the study of the basic resources of the area and to develop, from these, more complex and comprehensive exercises.

An open seminar on the research agenda was hosted by the Department of Land Management. From this seminar came indications of interest in collaborative research from several university departments, and I requested detailed proposals. Five submissions were eventually agreed upon:

- Reconnaissance land resource survey; involving an appraisal of the soil and water resources of the region using aerial photography supplemented by selective studies of soil and water, the survey would yield information on areas of arable potential and also on the potential for small-scale irrigation in the region;
- Production and marketing survey; providing an inventory of the main income-earning and subsistence activities of farmers in the region, this





*The Tonga settlements totally lack infrastructure.*

study would be linked to a farming-systems survey to identify major production constraints and to consumer surveys in neighbouring urban areas to determine the market for produce grown in the Sebungwe;

- On-farm trials of improved sorghums and millets, testing for suitability and farmer acceptance under Sebungwe conditions;
- Goat-production and management study, collecting data for a goat-improvement strategy and a pilot goat-marketing scheme; and
- Study of the household economy of gillnet fishing villages; examining fish consumption and sales as well as how they affect the household



*An open-air school in the Zambezi valley.*

economy of families in the region, the study would enable better planning with regard to the exploitation of the fish resources of Lake Kariba to the benefit of the local inhabitants.

These proposals were budgeted and then discussed in detail with senior government officials at the national, provincial, and regional levels as well as with the Binga district council. (For practical reasons, it was decided to site most of the initial work in Binga district.) The proposals were modified and then were submitted to external agencies for funding. Support was obtained from Ford Foundation, the International Development Research Centre (IDRC), the United States Agency for International Development (AID), and the University of Zimbabwe Research Board. Without adequate funding, the defined research agenda would have benefited neither the university nor the farmers.

### ***The field program***

With funding secure for the first year's fieldwork, the senior researchers involved visited the sites in which one or more of the studies were to be conducted. These were Simuchembu, Siabuwa, and Binga. Simuchembu lies about 300 km west of Harare and 100 km north of Gokwe village on the Sengwa river. It is a salient of agricultural land lying between Chimsu safari area and Chizarira National Park and, thus, is an area of land-use conflict between the agricultural and wildlife agencies. Siabuwa is some 50 km north of Simuchembu, on the other side of Chizarira National Park. It lies on the main road linking Harare and Binga and is about 70 km inland from Lake Kariba. Binga is 400 km west of Harare and 300 km north of Bulawayo and is situated on the shore of the upper reaches of Lake Kariba. Siabuwa is one of the most densely settled areas in the Sebungwe and has the longest history of cultivation. The infrastructure comprises a stone clinic and school as well as two small irrigation schemes in the vicinity of the settlement. Binga, likewise, is, for the region, quite well developed. It is the administrative centre of the Binga district and has the main government offices as well as a secondary school, clinic, and rest camp. More importantly for this project, as the settlement is on the lake, fishing is an important part of the local economy. Accompanying the university group was the provincial agricultural officer, the regional agricultural officer, the extension supervisor for the area, and the extension worker responsible for providing assistance and guidance to the farmers at the selected sites.

At each site, one or more villages would be involved in the research program. The extension worker called a meeting and the villagers met with the university party. At the meeting, the government agricultural staff introduced the university group and explained that the university was coming into the area to assist with agricultural development. The members of the university team then made a formal presentation to the meeting. This involved:

- An explanation of what the university was and why it wished to do research in the area;
- A description of the various study projects including a detailed exposition on materials and data to be collected and their use in the research; and

- A careful statement on the likely outcomes of the research and how the results could be used for development purposes.

Each meeting lasted several hours and involved detailed discussion on the choice of research topic and the program to be followed. In some instances, alternative research areas were suggested, and reasons for excluding such alternatives at this stage were given and debated. All cases either had been part of the initial research agenda or were topics impractical for university research at present. Research into cattle for draft power was a top priority at all the meetings, but the sites lay within tsetse-control areas, and regulations prohibit cattle. Until cattle restrictions were lifted or modified, such research would be impossible. However, the priority of this topic was noted for the future. In all cases, the proposed research was supported by the local residents. The timing of the field program was then outlined as well as any particular requirements for local support such as the hiring of field assistants.

The university is now in the early stages of the first year's fieldwork. All the studies have been initiated and the response from the communities directly involved has been most encouraging. The research, even at this early stage, has involved the farmers actively. An example is the production and marketing survey. At each site, the intended procedure was to interview formally a sample of some 40 farmers and then to conduct informal questioning of farmers selected randomly in their fields and homesteads, starting with Simuchembu and moving later to Siabuwa and Binga. The Simuchembu survey was conducted in September 1983, but I realized quickly that I would have to interview all farmers who presented themselves. The use of sampling techniques was unfamiliar to the local residents and could have provoked mistrust. Although some farm-management detail was lost from the survey (some 320 farmers presented themselves for interview), the outcome was a minor agricultural census of the site and included data on single women and widows. These last groups are easily missed in a sample survey. The essential data on production strategies and crop mixes have been collected, and the informal questioning after the formal survey appears to have bridged most of the gaps in the data.

The first year's fieldwork is intended to provide data sufficient for the program to begin introduction of new technologies. This step will be fully discussed with the farmers and their support sought. The link between the survey work and the choice of new technologies will be carefully explained. The communities will have to become familiar with the concept of sampling, as introducing a technology on a comprehensive basis is clearly impractical and undesirable. The intention is to familiarize the communities with the fundamentals of experimental design. The results of the fieldwork will be explained and the next stage outlined. The experimental design will, inevitably, be a compromise between scientific and local requirements. This collaboration is fundamental to stimulating input from the producers into the design and modification of new technologies.

The intention, therefore, is to involve the farmers actively in the entire process. The university is operating in a remote and difficult region with a small staff. There are no permanent university field facilities except for a research station on the shores of Lake Kariba accessible only by boat. Unless the communities and government field staff cooperate fully in the research,

an effective development-oriented program will be difficult to sustain. Much of the work to date has involved careful and systematic setting in place of the appropriate research agenda and the associated channels of communication. The coming season will test the feasibility of the approach.

### ***Conclusions***

The concept of research on small farms is novel in Zimbabwe. The Department of Land Management has, since independence, supported this approach to developing agricultural technology appropriate to the communal farming sector. The involvement in the Sebungwe provides a framework for a larger, interdisciplinary effort on the part of the university into on-farm and community studies. The program has enjoyed farmer input from the outset. The research agenda derived from the initial reconnaissance survey was heavily influenced by the views of the communities within the Sebungwe. The geographical logic to this survey played an important part in ensuring that the research agenda was realistic and reflected the priority needs of the region. As the agenda was pruned to a subset of topics manageable by the university, the counsel of senior local residents and officials was regularly sought.

The outcome was a set of research studies that fitted both the abilities of the university staff interested in working in the Sebungwe and the defined priorities of the region. The proposed implementation is designed to encourage further farmer participation. Although there remains much to be learned (and, no doubt, mistakes to be made), the enthusiasm of both the communities and the university and government staff is encouraging and bodes well for the future.