

ACROSS THE DIVIDE: THE IMPACT OF FARMER-TO-FARMER LINKAGES IN THE ABSENCE OF EXTENSION SERVICES

T.G.B. Hart¹ & R.P. Burgess²

Correspondence author: T.G.B. Hart, HSRC, Private Bag X41, Pretoria, 0001. E-mail: thart@hsrc.ac.za.

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ABSTRACT

The literature on recent trends in agricultural development emphasises the importance of extension and research practitioners participating with smallholder farmers in order to improve agricultural development, providing various cases to illustrate this point. The same body of literature also provides examples of networks amongst smallholder farmers that make a crucial difference to local agricultural development by supporting smallholders. These networks are seemingly made up of more or less homogeneous resource poor individuals: sharing their skills, knowledge, inputs, etc. to ensure their ability to produce and to survive. However, in some instances the members of these networks are not homogeneous individuals, but often come from diverse backgrounds, having different access to various resources. During the Apartheid era in South Africa the state extension services predominantly focused on the large-scale commercial farmers and paid scant attention to the smallholder farmers in the various rural reserves. This paper, in the form of a case study, describes the context, initial linkage and relationship between two apple farmers, one a large-scale commercial producer and the other a smallholder, in the south-western Cape deciduous fruit producing area. Despite Apartheid legislation and other socio-economic constraints this linkage and subsequent relationship allowed the smallholder to enter the national and the export apple markets during the 1970s and to continue to supply to these markets until today, despite most of his contemporaries having ceased their apple production by the 1970s. This was largely achieved by the farmer's ability to use the subsequent relationship to enable him to innovate his production practices within the confines of his political and socio-economic circumstances. This case provides three clear conclusions that must be noted by those involved in

¹ Senior Research Manager, HSRC, Private Bag X41, Pretoria, 0001. E-mail: thart@hsrc.ac.za.

² Senior Entomologist, ARC Infruitec-Nietvoorbij, Private Bag X5026, Stellenbosch, 7599. E-mail: burgessr@arc.agric.za.

agricultural development (1) relationships between farmers are important for their livelihoods, (2) farmers are innovators, whose innovations are constrained by the parameters of the context within which they are actors and not by their ability to innovate, and (3) where extension and research services do exist, they should seriously consider strengthening farmers' networks and innovations.

1. INTRODUCTION

Much of the current literature on agricultural development during the past decade, emphasises the need for development agents, including agricultural extension and research, to participate in meaningful ways with smallholder farmers in order to ensure natural resource management, sustainable production and agricultural growth (Scoones and Thompson, 1994; Reij and Waters-Bayer, 2001; Perret & Mercoiret, 2003; Pound *et al.*, 2003 and CTA, 2004;). The reasoning behind this argument is that farmers have many of the solutions to their own problems (Reij & Waters-Bayer, 2001), or can at least make meaningful contributions to solving their problems by virtue of knowledge regarding their circumstances and local environment (Chambers *et al.*, 1989; Scoones & Thompson, 1994). The combination of farmers' knowledge and that of appropriately focused research and extension can be a formidable force in agricultural development as the two can complement one another (Scoones & Thompson, 1994; Reij & Waters-Bayer, 2001; Perret & Mercoiret, 2003 and CTA, 2004). This literature also illustrates that much of the success of smallholder farmers relies on their local networks with one another and their self-initiated innovations to improve and adapt their practices in light of changing circumstances within the contexts in which they function; often marginal and risk prone environments (Scoones & Thompson, 1994 and Reij & Waters-Bayer, 2001).

Some successful projects have been carried out in sub-Saharan Africa, the success of which involved farmer innovations and linkages amongst farmers and between farmers and agricultural development agencies (including NGOs and official extension and research services). However, in many cases appropriate external support was lacking (Reij & Waters-Bayer, 2001) and farmers used whatever resources they could to compensate. Examples emphasising local innovations include the Indigenous Soil and Water Conservation and the Promoting Farmer Innovation projects in sub-Saharan Africa which encouraged groups of farmers to share and further develop their innovations by collaborating

with development supporting agencies, usually in the form of NGOs (Reij & Waters-Bayer, 2001).

Other examples, which emphasise extension linkages with farmers, include the study of the successful implementation of the Farmer Field School approach in Zanzibar (Bruin & Meerman, 2001) and its growth as a participatory extension and research approach in East Africa (Matata *et al.*, 2001). Smallholder farmers in Africa tend to share information and inputs with other farmers, be they family members, neighbours or farmers from other regions. These linkages and resulting networks of exchange seem to be one of the reasons why they are able to survive under some of the harshest physical conditions. Experience suggests that linkages between farmers exist both in the absence and in the presence of official extension services, warranting further consideration of the significance and contribution of these networks to agricultural development. This article adds to the discussion on networks and linkages by considering the impact of the linkage between a smallholder producer and a large-scale commercial apple producer, in the absence of official extension services.

2. SMALLHOLDERS AND DECIDUOUS FRUIT EXPORTATION

Exporting deciduous fruit from the Western Cape Province of South Africa to markets in Europe, North America and Asia contributes significantly to the province's Gross Domestic Product. The main export producers are large-scale farmers. Even with the change in discriminatory legislation and practices in South Africa after 1994, few smallholder farmers have entered this market. This is due to:

- the historical political inequalities faced by the predominantly coloured and black smallholder farmers, in particular the lack of access to agricultural resources and inputs, because legislation used to exclude them from mainstream commercial farming;
- the subsequent inability of smallholders to produce the volumes and, at times, the quality required for export;
- the significant influence of economies of scale, making it almost impossible for smallholders to achieve a significant profit.

The few smallholders who manage to export their fruit do so through collective or individual arrangements with large-scale commercial operations.

One such farmer is Aubrey Billet, aged 78, from Haarlem. In the absence of agricultural extension and research services, but through his linkage with a large-scale producer he started exporting apples in the 1970s. During the ensuing decades, he developed his own knowledge and innovations in both fruit production and socio-economic arrangements and could thus continue to export most of his annual apple crop.

3. AGRICULTURAL CHANGES IN HAARLEM

The hamlet of Haarlem lies in the narrow Langkloof Valley and developed around the mission station established by the Lutheran Church in the early 1800s. The nearly perfect climatic conditions, with cold winters and an altitude of 800m, have made this area well known for its export-quality apples and peaches. During the 1970s, numerous smallholder farmers exported their deciduous fruit in collaboration with neighbouring large-scale commercial farmers. The Lutheran Church helped the hamlet buy more land so that local farmers could expand their operations and produce even more for export.

However, the oil crisis in the late 1970s, the closure of the local railway station, politically motivated economic sanctions and the decline in value of the South African Rand relative to major foreign currencies led to the almost complete demise of deciduous fruit production by smallholders in Haarlem. By 1989, most had stopped growing apples for export. In the early 1990s, many uprooted the fruit trees and switched to arable cash crops. Agricultural production declined, but agriculture and associated employment remained important economic activities. Many residents were employed on surrounding large-scale farms and a few were employed on the smallholdings within Haarlem. Most smallholders now produce livestock and vegetables for household consumption, local sales and street vendors while a handful supply the fresh-produce markets in Port Elizabeth. A few still grow deciduous fruit for home and the local market. The remaining fruit trees are scattered and old. Aubrey Billet, however, still exports apples.

4. STRENGTHENING THE LINKAGE AND EARLY INNOVATIONS

Like other Haarlem smallholders during the 1960s and 1970s, Aubrey used his small piece of land to grow various crops for home consumption and local sales. The smallholders' farming practices were severely constrained because they could not buy inputs in small quantities from the local cooperative, which was geared for large-scale production and supplied inputs only in large quantities. During the 1970s, a large-scale farmer approached Aubrey and other smallholders and an arrangement was reached whereby they would produce high-quality apples, which he would buy and then sell on national and foreign markets. These farmers started planting an increasing number of apple trees and the large-scale producer transferred the necessary technology and advice. Those who worked as labourers on large-scale farms employed local residents to maintain the small orchards. The smallholders bought the small quantities of inputs they needed and could afford directly from the large-scale farmer. This enabled them to overcome the obstacles incurred by the unaffordable large volumes of inputs supplied by the co-op. Thus, they could enter the national and export apple markets.

Aubrey has a particularly keen interest in apple production, as does the large-scale farmer. Based on their mutual interest, these two men who differ greatly in socio-cultural background and economic status developed a strong friendship that continues today and extends to a friendship between Aubrey and the farmer's son, who now manages the large-scale commercial farm.

To sell to export markets, farmers must produce apple varieties that meet the high demands and preferences of consumers. As a result of changes in consumer preferences, farmers have to invest in new apple varieties every 10–12 years. Resource-poor farmers with, little land and facing high input costs, cannot afford to do this.

Aubrey planted most of his existing apple trees, of the Starking variety, in the mid-1980s. When market demand for Starking apples decreased, he wanted to switch to Granny Smith, but could only afford to replace a few trees immediately. He therefore decided to experiment with grafting Granny Smith shoots (scions) onto the existing Starking trees.

He had learned about grafting while discussing apple production with his large-scale farmer friend. He taught himself and soon became adept in using this technique. Rather than spend money to buy scions from a nursery, he asked his friend if he could select potential scions from the shoots pruned annually in July from young trees on the large-scale farm. He stored the scions in the vegetable crisper of his refrigerator (where the temperature never went below 5°C) until September/October and then grafted them onto his Starking trees. From his discussions with his friend, he knew that nurseries stored their scions in a similar way before grafting, but used a special storage medium too costly for Aubrey.

After a few trials, Aubrey discovered that he needed to use young scions, not older than one year, and to locate a place on the tree that would take new growth, i.e. where a new branch or shoot was emerging. He also had to make sure that the cut made on the tree was an almost perfect match to the cut on the scion, so that the newly grafted scion would take easily. As Aubrey could not afford a grafting knife, he used a sharpened kitchen knife that produced clean razor-edged cuts, ensuring a good fit. He noted that, when he changed apple varieties by grafting onto existing trees, he could harvest suitable fruits two to three seasons after grafting. This was more cost effective for him than replacing the trees, which had to be bought from a nursery and from which he could harvest only four to five seasons after planting. However, he bought a few Granny Smith trees to replace some older Starking trees.

5. SCALING OUT

A few years after grafting Granny Smith onto the Starking trees, the market preference changed yet again. A new variety, Royal Gala, became popular amongst local and foreign consumers. Aubrey obtained some Royal Gala scions from his friend and grafted these onto Starking and some Granny Smith trees. He also grafted a few onto some Starking trees that were producing Granny Smith apples, resulting in one tree producing both varieties on the same rootstock. He found that he could harvest Royal Gala apples within two seasons after grafting. However, he encountered some problems with the trees on which he had grafted both Granny Smith and Royal Gala. Each variety reacts differently to pests and diseases and therefore needs a different spraying schedule. If

early and late cultivars are grown on the same tree, timely spraying for one variety affects the quality and size of the other. This had serious financial implications. Thus, although he could successfully graft two varieties on one tree, his limited knowledge of pest and disease control led him to decide to use only one variety per tree. He therefore grafted Royal Gala only onto the remaining Starking trees.

6. WHEN TO GRAFT AND WHEN TO REPLACE TREES

Despite his success with grafting, Aubrey sees this as a short-term solution. He has noticed that a newly planted rootstock, with a pre-grafted scion, produces a better yield and fruit quality over a longer period in comparison to one of his “innovative trees”. He suggests that these trees be replaced with new trees when the rootstocks are about 20 years old. According to his experience, the quality and quantity of the fruit start to deteriorate in later years. Most of the trees onto which he grafted a new variety were ten years old at the time. The grafting effectively gives each tree another ten years of productive life with a different variety currently in high demand from consumers. By saving his income, he could buy replacement trees when the production of the “innovative trees” started declining. His relationship with the large-scale farmer and his son enabled him to purchase new trees at minimal cost. When they ordered their new trees from the nurseries, over 500 km away, they included Aubrey’s order. They did not ask him to contribute towards the transport costs and he did not have the expense of ordering a small quantity only for himself. He does not graft onto the new replacement trees until their production drops or the market requirements change, as these are purchased with the market-required variety pre-grafted onto them.

7. LESSONS FOR EXTENSION AND RESEARCH

The relationship that developed between two farmers who came from quite different backgrounds and have different resources, but share a common interest in apple production has played a pivotal role in Aubrey’s access to materials and ideas which he could integrate into his local knowledge and thus develop his innovations. It also gave him access to a relatively closed market. Unlike the other smallholder farmers he realised the potential of the linkage within the context of the 1970s and 1980s and developed it to the extent that it contributed to his

household livelihood for over three decades, enabling him to formally educate his three children. He turned a financial arrangement into a friendship that benefited him over the long-term. Such relationships and exchange of knowledge between farmers are important if they are to survive in a climate when research and extension services are being increasingly downsized. The success of this linkage is largely due to the fact that it was a mutual arrangement that was allowed to develop overtime; it was not prescribed from outside.

Only one other smallholder in Haarlem still grows apples for commercial purposes. Because he produces for the local market (consumers within Haarlem), his produce need not be of such high quality as is required for export. He does not practise grafting and relies on his old trees to produce what they can for the local market. Times have changed in Haarlem, and social reform in South Africa has made it possible for some smallholders to obtain loans and some government support. Also an extension officer now visits the community occasionally, as does a researcher from the Agricultural Research Council (ARC). This means that they are in a better position than Aubrey was in 1970 to purchase trees and get knowledge when required. These notable changes in the existing situation from the 1960s to the present emphasise the importance of context for a farmer with regard to how he /she goes about innovating, forming linkages and ultimately producing agricultural produce. The linkage in the 1960s enabled Aubrey and the other farmers to overcome a number of constraints, namely:

1. Access to input suppliers;
2. High input costs and the need to buy greater volumes than necessary;
3. Market access constraints such as distances and production of necessary volumes;
4. Access to crop information and market trends.
Often these are constraints that even today the extension services cannot resolve. This case stresses that linkages between farmers are important as they ensure their ability to produce, improve

production, enter distant and broader markets, and ultimately, a farmer's success.

The overall impact of extension services can be improved if:

1. extensionists identify the linkages or networks that exist between farmers, amongst smallholder farmers and other agricultural actors;
2. extensionists and researchers realise that farmers are innovators whose innovations need support, rather than outright rejection and the persistence with transfer of technology practices which might not be adopted or even adapted.

This example also shows that farmer innovations are context bound and implies the use of various linkages will affect the ability of farmers to innovate and the successful contribution these innovations make towards agricultural production. By using simple, low cost and immediately available resources and technology, smallholders innovate to ensure the sustainability of their production.

8. CONCLUSION

By expanding his knowledge through his own experimentation, within a politically unfavourable environment and without the direct support of agricultural extension and research services, a smallholder farmer continued producing apples for markets that were virtually inaccessible to smallholders, while most of his fellow smallholders sought other alternatives to maintain their livelihoods. His innovation allowed him to secure his family's livelihood and educate his children for more than three decades. This case provides three clear conclusions that must be noted by those involved in agricultural development:

1. Farmers' linkages are vital for their success and survival; providing them with access to various inputs and markets that are typically unattainable.
2. Such linkages can also provide the necessary catalyst and opportunity for farmers to innovate, thereby maximising the

potential of these linkages and subsequently optimising production within the constraints of their circumstances.

3. In light of this, effective agricultural extension and research requires officials and agents to not only work with farmers but to go beyond individuals and village groupings to look at the significance of broader linkages and the role these play in agricultural production and development. Where appropriate they should seriously consider strengthening farmers' networks and innovations, rather than ignoring or replacing these.

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